DOUGLAS AIRCRAFT COMPANY TORRANCE (C6) FACILITY PRELIMINARY PHASE III GROUNDWATER AND SOIL INVESTIGATION REPORT

Prepared for:

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DOUGLAS AIRCRAFT COMPANY'S TORRANCE (C6) FACILITY PRELIMINARY PHASE III GROUNDWATER AND SOIL INVESTIGATION REPORT

1.0 INTRODUCTION

The purpose of this report is to present the results of Task I and IA of the Phase III groundwater and soil investigation at the Douglas Aircraft Company's Torrance (C6) facility. The C6 facility is located at 19503 South Normandie Avenue in Los Angeles, California (Figure 1). Woodward-Clyde -Consultants (Woodward-Clyde) has conducted two previous investigations (1987 and 1988) in the area of Tank Cluster The results from these investigations 15T through 18T. identified this tank cluster as a potential source of (VOCs) identified in the compounds volatile organic information and Additional background groundwater. these earlier Woodward-Clyde results from analytical investigations can be found in the reports submitted to the California Regional Water Quality Control Board (CRWQCB), Los Angeles Region dated April 1987 and 10 May 1988.

2.0 SCOPE AND OBJECTIVES

The specific scope and objectives of the Phase III groundwater and soil investigation are outlined below. Objectives were to:

- Evaluate the quality of the groundwater entering the site in the apparent hydraulic upgradient direction of Tanks 15T through 18T.
- 2. Assess the lateral and vertical extent of VOCs in the groundwater in the vicinity of Tanks 15T through 18T.

- 3. Evaluate the potential for offsite migration of VOCs in the groundwater.
- 4. Obtain quantitative estimates for aquifer parameters in the shallow and deep zones within the semi-perched aquifer (to depths of 130 to 150 feet). These parameters are required for design of a remedial program.
- 5. To estimate the lateral and vertical extent of VOCs in the soil around Tank Cluster 15T through 18T.

These objectives were accomplished using an approach comprised of the following tasks:

- o Task I Installation of five shallow (70 to 90 feet) observation wells (WCC-6S, -7S, -8S, -9S, and -10S) and two deep (120 to 140 feet) observation wells (WCC-1D, and -3D). In addition, Task I involved advancing four soil borings in the vicinity of Tank Cluster 15T through 18T.
- o Task IA Slug testing of five shallow wells and two deep wells.
- o Task III Aquifer testing.
- o Task IV Evaluation of data and report preparation.

The background for this investigation and a description of the tasks is described in Woodward-Clyde's work plan approved by the CRWQCB entitled "Douglas Aircraft Company Torrance (C6) Facility Phase III Ground Water and Soil Investigation Work Plan," dated 9 February 1989. This report presents the results obtained to date from Tasks I, IA, III and IV. No Task II wells had been installed at the time this report was prepared. Task II wells were not considered necessary at this time, for this phase of investigation, based on results from Task I wells.

2.1 Task I

The work performed during Task I involved advancing four soil borings (B-6, -7, -8, and -9), each to a depth of approximately 65 feet, around Tank Cluster 15T through 18T, to evaluate the extent of VOCs in this area. This task also involved installing wells at two depths in the water-bearing unit called the semi-perched aquifer. upper zone wells are screened from 60 to 90 feet below ground surface, with the static water level at approximately 70 feet below ground surface. These upper zone wells will henceforth be referred to as "shallow" wells. The lower zone wells are screened from 120 to 140 feet below ground surface. The lower zone wells will henceforth be referred The installation of observation wells to as "deep" wells. within the upper and lower zones of the semi-perched aquifer was designed to evaluate differences in vertical gradient and concentrations of VOCs within the semi-perched aquifer. Observation Wells WCC-1D, -3D, -6S, -7S, -8S, -9S, and -10S have been installed in accordance with Task I of the work The observation well locations are shown on Figure 2. Task I also included development of the observation wells, and the collection and analysis of groundwater samples. Wells WCC-1S through WCC-5S had been installed during an earlier phase of work.

2.2 Task IA

The objective of Task IA was to conduct slug tests on six shallow wells and two deep observation wells to provide preliminary estimates of hydraulic conductivity in the shallow and deep zones of the semi-perched aquifer. These data have been used in estimating groundwater velocity and the distribution of VOCs in the groundwater within the subject area.

2.3 Task III

Woodward-Clyde conducted a pump test at the Torrance facility to observe the response of the semi-perched aquifer to hydraulic stresses created by pumping.

3.0 FIELD PROGRAM

3.1 Soil Boring Installation

Four soil borings, B-6, -7, -8, and -9, were drilled around Tank Cluster 15T through 18T, as shown on Figure 2. Each soil boring was drilled to a depth of 66.5 feet below ground surface. The purpose of the borings was to assess the vertical and horizontal extent of VOCs in the vadose zone soil in the vicinity of the tanks. Borings B-6 and B-7 were placed along the south side of the tanks, while Borings B-8 and B-9 were placed about 40 feet away, to the east and north of the tanks, respectively.

Field procedures used for drilling and sampling activities are described in Appendix A. The lithologic boring logs from B-6, -7, -8, and -9 are presented in Appendix B. The results of soil sample analyses from these borings are presented in Section 4.4.

3.2 Observation Well Installation

Seven observation wells were installed during Task I of this investigation, as previously discussed in Section 2.1. Five of the wells were completed to a depth of 90 feet, and two were completed to a depth of 140 feet. The locations of these wells are shown on Figure 2 and the procedures involved in the installation are described in Appendix A.

Of the five shallow wells, the first, WCC-10S was completed near the northwest corner of the property. This location was chosen to provide information on the quality of groundwater entering the site. The second and third wells, WCC-7S and -8S, were installed downgradient of Tank Cluster 15T-18T to assist in evaluating the lateral extent of VOCs in the groundwater. Observation Well WCC-7S was placed about 160 feet south of WCC-4S, and WCC-8S was placed approximately 125 feet north of WCC-1S. These locations were chosen considering variations in the direction of groundwater flow (southeast) previously measured at the site, and the concentration level of VOCs in WCC-1S, -3S, and -4S.

The two deep wells were installed to assess the possibility of VOCs migrating vertically downward into the lower zone of the semi-perched aquifer. Well WCC-3D was installed approximately 30 feet east of the tank cluster, and WCC-1D was completed about 190 feet east-southeast of WCC-3D, next to WCC-1S. These wells were also installed to evaluate the differences in hydraulic conductivity between the deep and the shallow zones of the aquifer.

As proposed in the Phase III work plan, Wells WCC-6S and WCC-9S were installed after receiving chemical analysis results from the three initial shallow observation wells (i.e., WCC-7S, -8S, and -10S). Because the results indicated VOCs were present at elevated concentrations in WCC-7S, Wells WCC-6S and WCC-9S were installed in locations which could intercept a more south to southeast path of migration than the wells previously installed.

3.3 Observation Well Slug Testing

Task IA involved conducting slug tests on six shallow wells, and two deep wells, to obtain estimates of horizontal hydraulic conductivity (k) values in the immediate vicinity of the six wells for the shallow and deep zones. Slug tests were completed on shallow Wells WCC-4S, -5S, -7S, -8S, -9S,

and -10S. Two deep wells WCC-1D and WCC-3D were also slug tested. Testing dates were 19 July, 31 August, and 4 October 1989. An Envirolabs Data Logger, model DL-120-MCP equipped with a pressure transducer was used for raw data collection. Slugs of water being introduced and withdrawn from each well were simulated by volume displacement using a 39-inch-long, 3.25-inch-diameter mandrel constructed of PVC pipe and plugs, and filled with silica sand. The slug test procedures and subsequent data analysis are described in Appendix A, while the slug test results are discussed in Section 4.2.

3.4 Pump Test

As part of Task III of this investigation, Woodward-Clyde conducted a 30-hour, constant discharge pumping test on 20 through 21 December 1989 at the Torrance (C6) facility. Well WCC-4S was pumped using a 1-1/2 horsepower submersible Observation wells included WCC-1S, -4S, -6S, -7S, -8S, -9S, and -1D. Five of the wells were automatically monitored for water level using three Terra-8 data loggers equipped with a total of five pressure transducers. addition water levels were measured at regular intervals for all of the wells except WCC-1S, -1D, and -4S (monitored by data logger), using a Solonist electrical well sounder. Water level monitoring continued from the time the pump was switched on until two hours after the pump was switched off. The pump test procedures and the subsequent data analysis are described in Appendix A and the pump test results are discussed in Section 4.3.

4.0 RESULTS

4.1 Geology

The general description of shallow (less than 90 feet below ground surface) geologic deposits beneath the site was

4.2 Slug Testing Results

Results from slug testing of Observation Wells WCC-4S, -5S, -7S, -8S, -9S, -10S, -1D, and -3D, including the data Hydraulic Table 1. in summarized are conductivity values ranged from 24 to 140 gallons per day per square foot (gpd/ft^2) in the shallow wells. values are typical of the sandy silts and silty sands encountered during drilling in the shallow water bearing zones of the semi-perched aquifer. The calculated hydraulic conductivity values were 21 gpd/ft2 for 6.6 gpd/ft^2 for WCC-3D.

4.3 Pump Test Results

The pump test data from each well showing a discernible response were analyzed using one or more of the following techniques: Recovery (Residual Drawdown) plot, Cooper-Jacob Time Drawdown plot, and/or Distance/Drawdown plot. A summary of the results is presented in Table 2. Slug test values obtained earlier are included for reference.

The hydraulic conductivity value derived from the pump test at the pumping well, WCC-4S, was 470 gpd/ft² based on analyses of recovery data (residual drawdown). This compares favorably with the pump test values calculated by both the Cooper-Jacob method and the Distance Drawdown method using data from the surrounding observation wells. Overall, the calculated hydraulic conductivity values vary within a factor of two (see Table 2). Local variations in stratigraphy can easily account for this level of variability.

The conductivity values calculated from the slug tests are not directly comparable with conductivity values calculated from the pump test, since the former only tests the portion of the aquifer immediately adjacent to the well screen,

while the pump test stresses a much larger volume of the aquifer. Overall the slug test hydraulic conductivity values are roughly on an order of magnitude lower than the pump test values. This level of variability is not surprising given that the specific assumptions and mechanics of the two test techniques are remarkably different.

Variations in the storage coefficients are somewhat greater than those for transmissivity. Fairly wide variations in the calculated storage coefficient are not unusual and, in general, have a minimal impact on the calculated yield.

4.4 Groundwater Gradient and Velocity

The groundwater gradient was calculated from the groundwater elevation data collected on 18 October 1989 (see Table 3), using Equation 1-1 as follows:

$$I = \frac{h_1 - h_2}{I} \tag{1-1}$$

Where:

/ = Gradient (ft/ft)

 h_1 = Upgradient groundwater contour elevation (feet)

 h_2 = Downgradient groundwater contour elevation (feet)

L = Distance between groundwater contours (feet)

Based on groundwater level data of 18 October 1989, the gradient across the C6 facility appears to be south to southeast as shown on Figure 3. The gradient was calculated using the assumption that all water bearing strata in this

area act as one hydrogeologic unit. This assumption is considered valid for preliminary evaluation of flow velocity and the extent of VOCs in the groundwater.

A gradient of 0.002 towards the south-southeast was calculated using Equation 1-1.

The groundwater velocity was calculated from Darcy's equation:

$$V = \frac{KI}{7.48 \ n_e} \tag{1-2}$$

Where:

V = Groundwater velocity (feet per day)

K = Hydraulic conductivity of the media based on slug test values calculated in Section 4.3 (gal/day/ft²)

= Groundwater gradient calculated from Equation 1-1

7.48 = The number of gallons of water per cubic foot

 n_a = Effective porosity of the saturated media

Assuming:

K = 715 gal/day/ft² for shallow wells
NOTE: The hydraulic conductivity value used in the
calculation was the average of the values obtained
from all the pump test analytical methods used.

/ = 0.002 ft/ft calculated from Equation 1-1

 n_o = 0.30 for silty fine-grained sand.

Based on the calculations and assumptions above, the groundwater velocity is approximately 0.64 feet per day or 234 feet per year in the shallow zone of the semi-perched aquifer.

There does not appear to be a significant vertical groundwater gradient between the shallow and deep aquifers. The approximately equal static groundwater levels measured in the associated shallow and deep observation wells WCC-1S and -1D, and WCC-3S and -3D, indicate the major component of groundwater flow is horizontal.

4.5 Soil Sampling and Analytical Results

Soil samples were collected from all the observation wells and soil borings installed during the field program described in Appendix A. Samples which had elevated OVA headspace readings and which were in close proximity to tank Cluster 15T through 18T, as well as samples from WCC-6S, were selected for analytical testing. Soil samples at selected depths from B-6, B-7, B-8, B-9, and WCC-6S were analyzed by EPA Method 8240 at West ast Analytical Service in Santa Fe Springs. A summary of results presented in Table 4, while the analytical data sheets provided by WCAS, and chain-of-custody forms are presented in Appendix C.

The soil sampling results show low concentrations of organic compounds present in most of the borings installed around tank cluster 15T through 18T. Boring B-6 seems to be located near the source of the release. At this location the soil column contained elevated levels of organic compounds beginning at a depth of 20 feet and continuing down to at least 60 feet. At the other boring locations the organic compound concentrations became elevated at depths of 40 feet or more. Both halogenated and nonhalogenated

compounds are present at location B-6, with the higher concentrations of each present at a depth of 20 feet. Toluene was the dominant nonchlorinated hydrocarbon present 1,1,1-trichloroethane (1,1,1-TCA)and ethylene (TCE) were the dominant chlorinated hydrocarbons. At Boring B-7, which is located about 30 feet east of Boring B-6, a similar mix of compounds is present, however, their concentrations are at a greater depth in the boring. highest concentrations of compounds are present at a depth of 60 feet, with methylene chloride identified in the soil for the first time at this depth. Samples from Boring B-8, which is located east of the tank cluster, also contained low (<1 ppm) concentrations of compounds except for toluene, which was present at 25 ppm at a depth of 65 feet. from Boring B-9, which is north of the tank cluster, also low concentrations of compounds at depth contained (generally less than 1 ppm).

Three samples collected at, and just below, the water table from the borehole in which Well WCC-6S was installed, contained low concentrations of MEK (9.4 ppm), MIBK (8.4 ppm), toluene (1 ppm), and a compound tentatively identified as butyl cellosolve (0.3 ppm).

4.6 Groundwater Sampling and Analytical Results

During this task, two rounds of groundwater samples were collected and analyzed during July and August from monitoring Wells WCC-1D, -3D, and -1S through -10S, except WCC-6S and WCC-9S. These two wells were the most recently installed, and water sampling was completed the first week in October. The procedures used during these sampling efforts are described in Appendix A.

All of the water samples tested, including groundwater samples, duplicates, rinse blanks, and trip blanks, were analyzed for VOCs by EPA Method 624 by WCAS. For the first round of sampling, one sample from each well, two duplicate samples, three rinse blanks, and one trip blank were analyzed. Analysis of water samples from the second round included one sample from each well, two rinse blanks, and one trip blank.

The groundwater analytical results are summarized in Table 5. Analytical data sheets provided by WCAS, and chain-of-custody forms are attached in Appendix C.

The data indicate that of the 10 shallow wells sampled at the facility only WCC-2S, located upgradient to the northwest of Tanks 15T through 18T, -5S, and -9S, both located along the eastern boundary of the site, contained total VOCs at or below 30 ppb, predominantly TCE. One well, WCC-10S, contained TCE at about 80 ppb and less than 5 ppb of chloroform. The other six shallow wells all contained a similar mix of VOCs, with the dominant compounds being TCE, 1,1-dichloroethene (1,1-DCE), and 1,1,1-TCA, with lower concentrations of cis-1,2-dichloroethene (cis-1,2-DCE) also present.

The deep well closest to the tank cluster (WCC-3D) contained 1,1,1-TCA at concentrations of around 50 ppb on the first occasion the well was sampled. Trace amounts of TCE, toluene, and cis-1,2-DCE were also present. When the well was resampled one month later only 1,1,1-TCA was detected, but the detection limits were ten times higher for the other compounds measured in the first round of sampling because of a laboratory error. Samples from the other deep well

(WCC-1D), contained low concentrations of 1,1,1-TCA (1 ppb), TCE (2 ppb), and cis-1,2-DCE (1 ppb). The total VOC concentration in Well WCC-1D was less than 10 ppb.

The water quality data collected to date indicate the presence of TCE in the groundwater (Well WCC-10S) entering DAC's Torrance (C6) facility. The TCE concentration was at approximately 80 ppb, nearly an order magnitude higher than the TCE concentration in Well WCC-2S. upgradient of Tanks 15T through 18T, and Wells WCC-5S and -9S at the downgradient boundary of the site. Wells WCC-7S and WCC-8S are located south and north, respectively, of the previously identified area of groundwater containing VOCs. Concentrations of VOCs in these two wells are greater than concentrations in the upgradient well, indicating that the north-south extent of the organic compounds in the groundwater has not been fully established.

5.0 EVALUATION OF GROUNDWATER TREATMENT OPTIONS

with Concurrent field investigations performed by Woodward-Clyde at the Torrance facility, an evaluation was treatment options for groundwater containing chlorinated and non-chlorinated hydrocarbons at the site. It was originally the intent of Douglas Aircraft Company to conduct a pilot evaluation of groundwater treatment systems using water produced during the pump test at the site. However, the quantity of water produced during the pump test not enough for pilot tests, and so bench evaluation will be conducted. The tests will be conducted on some of the systems described in the following sections.

5.1 Description of Treatment Options

There are many treatment systems for the removal of organic compounds from groundwater. Three of these systems are:

- o Activated Carbon Adsorption
- o Air/steam Stripping
- o Oxidation

Woodward-Clyde assumed a flow rate of 50 gallons per minute (gpm) and organic concentrations at the levels found in WCC-4S for the characteristics of the influent in this treatment evaluation. The effluent organic concentrations assumed for this evaluation were the California State Action Levels.

5.1.1 Activated Carbon Adsorption

The process of adsorption onto activated carbon involves contacting the organic contaminated groundwater with the carbon, by flow through a series of packed bed reactors. The activated carbon selectively adsorbs chemical constituents by a surface attraction phenomenon in which organic molecules are attracted to the internal pores of the carbon granules.

Once the micropore surface are saturated with organics, the carbon is "spent" and must be replaced with regenerated or virgin carbon. The time to reach "breakthrough" or exhaustion is the most critical operating parameter. Carbon longevity balanced against influent concentrations governs the operating economics.

5.1.2 Air Stripping

Air or steam stripping is a mass transfer process in which organic constituents in groundwater are transferred to the gas phase (in air/steam). Air or steam stripping is frequently accomplished in a packed tower equipped with an air blower. The packed tower works on the principle of countercurrent flow. The influent water flows down through

the packing, while the air/steam flows upward, and is exhausted through the top. Volatile, soluble components have an affinity for the gas phase and tend to leave the aqueous stream for the gas phase. The gas phase effluent must be controlled. This is usually accomplished by using a carbon scrubber for air stripping and a vapor condenser followed by product-water separator for steam stripping.

Woodward-Clyde reviewed the Ejector System, Inc. cascade air stripping. This system is designed to accommodate field changes by allowing for the addition or subtraction of cascade tray modules as conditions dictate. The system is low profile and units are typically shipped completely assembled. Other systems, such as the Aquadetox process, use the same basic principles.

5.1.3 Oxidation

Treatment of groundwater using oxidation is not a new process. New applications using hydroxyl radicals as the oxidizing agent are now available. These radicals can be produced by: ultraviolet (UV) light, hydrogen peroxide, and/or cavitation reactions. Organic constituents are oxidized to carbon dioxide and water by the hydroxyl radicals.

Two types of oxidation systems which Woodward-Clyde evaluated were the CAV-OX process and the Perox-pure process. The CAV-OX process uses induced cavitation and UV light to allow oxidation to occur. The Perox-pure system uses hydrogen peroxide and UV light to cause the oxidation process.

Representatives from each of the vendors expressed the need for bench scale testing in order to better estimate the operation and maintenance costs associated with their

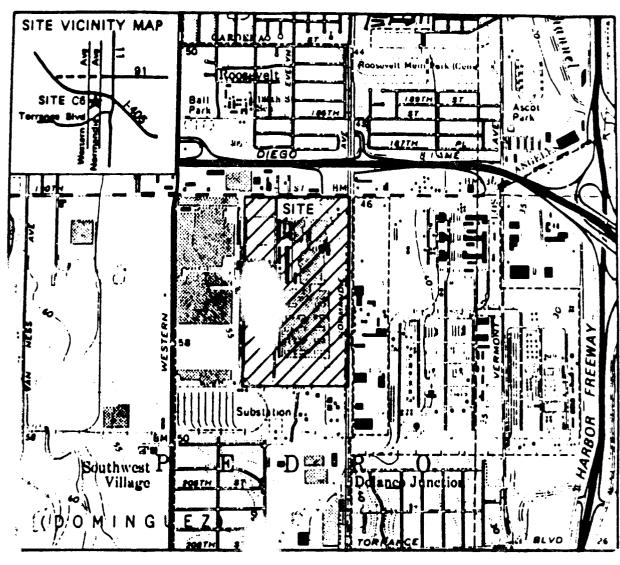
Such evaluations will be conducted by Douglas Aircraft after bench scale testing has been completed to aid in the selection of an appropriate system.

5.2 Discussion

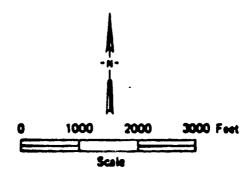
During this alternative review, vendors contacted indicated that treatability studies done on laboratory scale are Generally this fee is charged to completed for a fee. recoup analytical analysis cost incurred during the testing Two types of systems will be evaluated by of the systems. Douglas Aircraft Company for possible treatment methods for the C6 facility: air/steam stripping and oxidation. laboratory tests will allow vendors to better conceptualize the required treatment scheme. Also, this will allow an analysis of capital and operation costs for each system and it will help to evaluate the effectiveness of the systems.

6.0 REFERENCES

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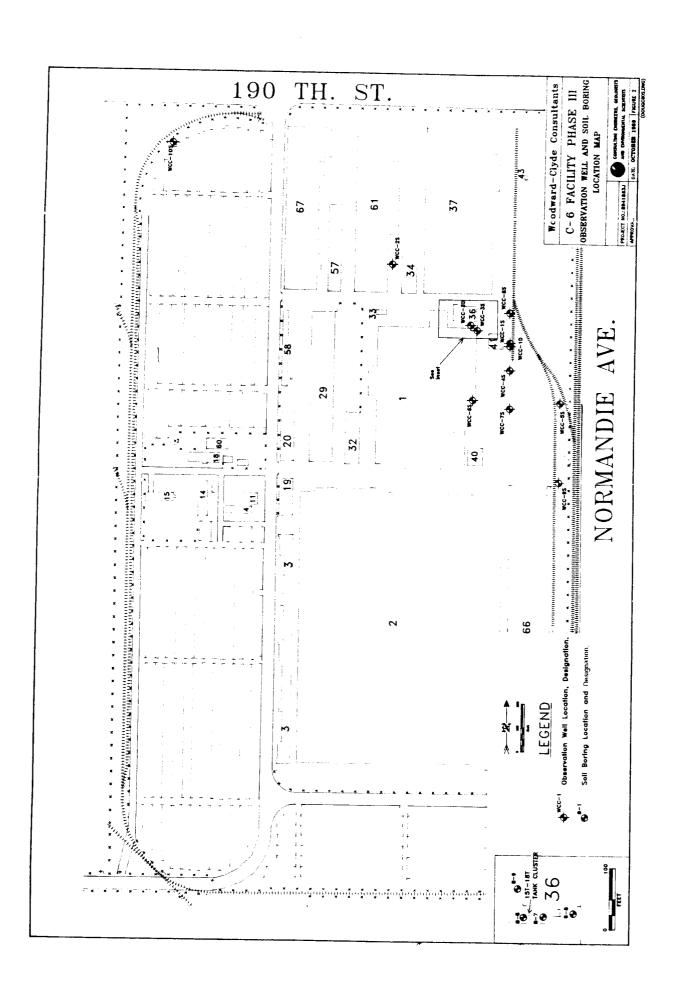
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C6 FACILITY LOCATION MAP

FIG. 1



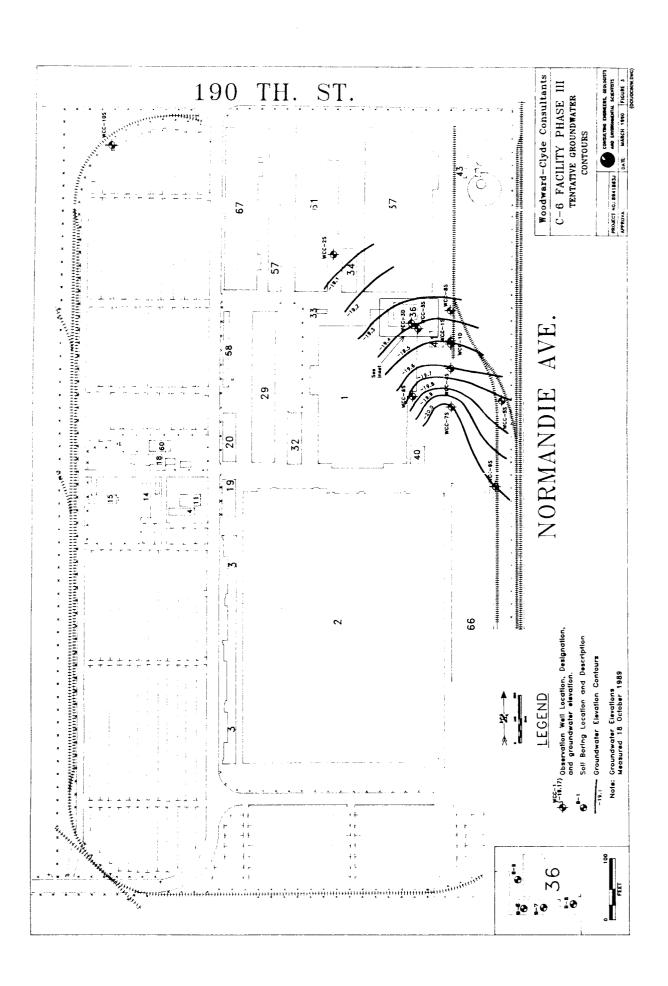


TABLE 1 SLUG TEST DATA REDUCTION DOUGLAS AIRCRAFT C6 FACILITY, TORRANCE CALIFORNIA

Where:

K = Hydraulic Conductivity

Rc = Radius of well casing in feet

Re = Effective Radius of influence (ft)

Yo = Initial drawdown at time t =0 (sec)

t = Selected time/drawdown semi-log plot (sec)

(Bottom of aquifer approx. 150 feet)

B = Constant based on L/Rw

D = Thickness of aquifer in feet

L = Length of screen of saturated thickness

Rw = Radius of Boring in feet

if entire screen is not saturated in feet

H = Distance from base of well to SWL (ft)

A = Constant Based on L/Rw

Yt = Drawdown at time t (sec)

Dw = Depth of well (ft)

Depth to water(ft) - Measured 19 July, 30 August, and 4 October 1989.

19.99 79.99 0.5 0.17 0.42 19.99 70.01 47.60 20 3.1 3.65E-05 2.48737 WCC-8S 0.17 0.42 70.01 19.99 79.99 19.99 0.5 47.60 0.62 90 3.1 1.13E-03 0.94 20 3.74E-05 3.69E-05 2.48737 2.39E+01 Z 0.42 81.59 0.5 5. 21.59 21.59 51.40 0.17 68.41 0.7 8 დ. ₩ 20 2.57881 6.58E-05 OUT WCC-7S 0.5 0.17 0.42 21.59 81.59 21.59 51.40 0.84 0.38 20 6.71E-05 2.05E-03 8 68.41 3.1 6.85E-05 4.34E+01 2.57881 Z 0.42 0.5 69.69 48.36 2.05 0.17 8 20.31 80.31 20.31 <u>ა</u> 0.61 2.50616 2.16E-04 OUT WCC-5S 0.5 0.42 69.69 48.36 0.65 0.16 0.17 80.31 2.50616 6.76E-03 8 20.31 20.31 က — 2.27E-04 1.43E+02 -2.22E-04 Z 5. 0.42 90 69.35 20.65 80.65 20.65 0.5 0.33 20 0.17 3.1 49.17 2.52584 1.34E-04 OUT WCC-4S 20.65 0.17 0.42 69.35 20.65 80.65 0.5 49.17 0.28 3.57E-03 ა 1 0.87 20 2.52584 1.00E-04 1.17E-04 8 7.56E+01 Z AVG K (Gal/day/ft2) K (ft/sec) = AVG K (CM/SEC) Parameter $L = (Dw-DTW)^*$ D = (150 - DTW)H = (Dw-DTW)AVG K (ft/sec) Ln Re/Rw = Z Z <u>≯</u> ₹ <u></u> ٥ ಜ ⋖ œ

TABLE 1 (Continued)

Parameter				-))		20 001	
Rc	Z	OUT	Z	OUT	Z	OUT	Z	OUT
	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
≥	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
X	06	06	06	06	140	140	140	140
WTO	67.17	67.17	69.51	69.51	70.09	70.09	70.62	70.62
L = (Dw-DTW)*	22.83	22.83	20.49	20.49	20	20	20	20
D = (150-DTW)	82.83	82.83	80.49	80.49	79.91	79.91	79.38	79.38
H = (Dw-DTW)	22.83	22.83	20.49	20.49	69.91	69.91	69.38	69.38
A	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
c m	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
I /Bw	54.36	54.36	48.79	48.79	47.62	47.62	47.62	47.62
0	0.91	1.9	96.0	1.5	2.25	2.4	1.68	1.7
	0.16	0.21	0.56	0.83	0.39	0.52	1.23	1.36
	71	77	20	20	117	117	09	09
In Be/Bw =	2.64567	2.64567	2.51661	2.51661	3.19028	3.19028	3.18702	3.18702
K (ft/sec) =	4.10E-05	4.79E-05	4.78E-05	5.25E-05	3.45E-05	3.01E-05	1.20E-05	8.56E-06
AVG K (ft/sec)	4.44E-05		5.02E-05		3.23E-05		1.03E-05	
AVG K (CM/SEC)	1.36E-03		1.53E-03		9.86E-04		3.13E-04	
(2)	2.87E+01		3.24E+01		2.09E+01		6.63E+00	

TABLE 2
SUMMARY OF AQUIFER HYDRAULICS TESTING

		Hydraulic Condu	ıctivity (gpd/ft ²)	
Well No.	Slug Test ^a	Pump Test	Pump Test ^b Analysis Method	Coefficient of Storativity (S) (from pump test)
1\$		460	Cooper Jacob	0.014
2\$	NT	NM		
3 S	NT	ND		
4\$	76	470	residual drawdown	
5S	140	NM		
6S	NT	970	Cooper Jacob	0.004
7S	43	970	Cooper Jacob	0.013
8\$	24	560	Cooper Jacob	0.009
9\$	29	NR		
10\$	32	NM		
1D	NT	NR		
3D	6.6	NM		
1S, 6S, 7S, 8S		860	Distance drawdown (500 minutes)	0.007

a Slug test values included for reference, generally not directly comparable to pump test values.

b WCC-4S was pumping well.

NT Not tested.

NR Not responsive.

NM Not monitored.

TABLE 3

GROUND WATER ELEVATION DATA COLLECTED 18 OCTOBER 1989
DOUGLAS AIRCRAFT C6 FACILITY, TORRANCE, CALIFORNIA

Well No.	Elevation ¹ Top of Well ² (ft)	Depth to Ground Water From top of Well (ft)	Elevation of Ground Water (ft)
WCC-1S	50.70	70.18	-19.48
WCC-2S	50.59	69.65	-19.06
WCC-3S	51.19	70.61	-19.42
WCC-4S	49.69	69.28	-19.59
WCC-5S	48.22	67.92	-19.70
WCC-6S	50.95	70.65	-19.70
WCC-7S	48.29	68.36	-20.07
WCC-8S	50.56	69.91	-19.35
WCC-9S	47.01	67.08	-20.07
WCC-10S	51.12	69.54	-18.42
WCC-1D	50.45	69.96	-19.51
WCC-3D	51.18	70.56	-19.38

- 1 Reference: City of Los Angeles Benchmark CY-3028, datum is Mean Sea Level (MSL).
- 2 Top of well is top of well casing on north side marked with permanent ink.

TABLE 4

RESULTS OF SOIL ANALYSES AT DAC C6 FACILITY

Boring Number	Depth of Sample (feet)	Halogenat (EPA Meti	ed and Aromatic Volatile Organics nod 8010/8020, concentrations in ppm)
B-6	10	0.053 0.011 0.016 0.064 0.001 0.009	methylene chloride DCA TCE toluene ethylbenzene total xylenes
B-6	20	12 45 1,900 51 390	TCA TCE toluene ethylbenzene total xylene
B-6	30	48 21	toluene total xylenes
B-6	30	19 6	toluene total xylenes
B-6	40	59 23 320 2.9 21	TCA TCE toluene ethylbenzene total xylenes
B-6	50	0.06 0.09 0.53 0.035 0.31 0.03	1,1-dicholoroethylene DCA TCA TCE toluene total xylenes
B-6	60	7.7 9.9 2.9	TCA toluene total xylenes
B-7	30	0.15 0.09 1.7 0.09	TCA TCE toluene total xylenes
B-7	35	1	total xylenes
B-7	40	10 40 1	TCA toluene total xylenes

TABLE 4 (continued)

Boring Number	Depth of Sample (feet)	Halogena (EPA Me	ated and Aromatic Volatile Organics thod 8010/8020, concentrations in ppm)
B-7	40	12/10 25/40 <1	TCA toluene xylenes
B-7	50	57 880 4 41 1.7	1,1-dichloroethylene TCA 1,1,2-trichloroethane toluene total xylenes
B-7	60	20,000 600 59,000 140 450	methylene chloride 1,1-dichloroethylene TCA tetrachloroethylene toluene
B-8	45	0.27	toluene
B-8	50	0.04	toluene
B-8	60	0.04 0.44 1.0	DCA TCA toluene
B-8	65	0.05 25	TCA toluene
B-9	40	0.03 0.02 0.08 0.1	DCA TCA TCE toluene
B-9	50	0.02 0.11	TCE toluene
B-9	55	0.03 0.06	TCA toluene
WCC-6S	75	9.4 8.4 1.0 0.30	MEK MIBK Toluene Butyl Cellosolve

TABLE 4 (continued)

Boring Number	Depth (feet)	Haloger (EPA M	nated and Aromatic Volatile Organics ethod 8010/8020, concentrations in ppm)
WCC-6S	80	9.2 .24 2.50 2.20 .08 0.70	MEK DCE MIBK toluene TCE butyl cellosolve
WCC-6S	85	.550 .330 .150 .007	MEK MIBK toluene TCE

Borings 8 and 9 sampled on 6/14/89, Borings 6 and 7 sampled on 6/13/89.

MEK, 2-Butanone MIBK, 4-methyl-2-pentanone TCA, 1,1,1-trichloroethane TCE, trichloroethylene DCE, 1,1-dichloroethylene

TABLE 5
GROUND WATER ANALYTICAL DATA AT DOUGLAS AIRCRAFT C6 FACILITY, TORRANCE, CALIFORNIA
(Concentration in ug/l)

_			— т	т-																																																									
	cis-1,2-DCE		1 1 2 2	- 2000 - 1,000	1 102	6/6	3.58		\$1\cdot 1\cdot 1	- 4 =	<10																																																		
	Benzene	85 110/ 160 < 20 < 30	1122		. 1 6, 5	- 1/c1 - 1/c1	, 10 , 30 , 30	\$ \\ \chi_2 \\ \	<1/<1 <1/	2 2 2	× 10																																																		
	Toluene	-/- -/- <20 <30	φ- ₇ -	80,000 140,000 32,000 56,000	1 1 60 100	<1/<1	1,000	\$ \$ -	<1/<1		< 10 01 >																																																		
	Chloroform	-/- 88 88 88 88	1122	- ' 500 - ',000	V V V V V V V V V V V V V V V V V V V	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1, 00, 00, 00, 00, 00, 00, 00, 00, 00, 0	\$ \$ \$	3/3	₹ ₹	<10																																																		
QNI	trans-1,2-DCE	-/- 75 <20 <30 <		1,000 660 000,1 >	2 1 5 53 1 2	- <1/<1 <1	11 < 30	0 0 0	<1/<1	₹ ₹	~10 ~10																																																		
COMPOUND	MIBK	-/- -/- - 100 * 100		54,000 70,000 < 3,000 < 5,000	1 1 0 08	- <5/<5 <5		88 %	<5/<5 <5	\$ \$ \$ \$ \$ \$	<50 <50																																																		
	TCE	4,600 5,500/3,600 5,200 2,400 2,800	4 4 4 8 8	10,000 11,000 7,700 6,000	700 690 270 410	10 13/12 12	1,400	240 430	86/87 81	22	< 10																																																		
	1,1,1-TCA	300 260/120 160 67 < 30	n 1 <u>^ ^ ^</u>	110,000 54,000 56,000 78,000	14 35 7	1/1/	130 110 66	8 ₅ 2	<1/ <tr><1/<td><1/<td></td><td><u>.</u></td><td>49 32</td></td></tr> <tr><th></th><th>1,1-DCA</th><td>-/- 23 <20 <30</td><td>1122</td><td>1,000 ,1,000 ,1,000</td><td>1 1 2 2</td><td>- <1/<1</td><td>4<10<30</td><td>\$ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \</td><td><1/<1</td><td>.</td><td><10 <10</td></tr> <tr><th></th><th>1,1-DCE</th><th>3,700/2,500 3,000 900 1,500</th><th>2007</th><th>38,000 88,000 18,000 56,000</th><th>360 1,200 170 360</th><th>7 4 3/3 <1</th><th>210 850 1,100</th><th>430 820</th><th>2/1</th><th>77</th><th><1 <10</th></tr> <tr><th></th><th>SAMPLE DATE</th><td>03/27/87 04/13/87* 11/12/87 07/13/89 08/23/89</td><td>11/02/87 11/12/87 07/13/89 08/23/89</td><td>11/02/87 11/12/87 07/13/89 08/23/89</td><td>11/02/87 11/12/87 07/13/89 08/23/89</td><td>11/30/87 01/08/88 07/13/89* 08/23/89</td><td>10/6/89 07/13/89 08/23/89</td><td>07/13/89</td><td>10/6/89 07/13/89* 08/23/89</td><td>07/25/89 08/23/89</td><td>07/25/89 08/23/89</td></tr> <tr><th></th><th>WELL I.D.</th><td>WCC-1S</td><td>WCC-2S</td><td>WCC-3S</td><td>WCC-4S</td><td>WCC-5S</td><td>WCC-6S</td><td>WCC-8S</td><td>WCC-9S WCC-10S</td><td>WCC-1D</td><td>WCC-3D</td></tr>	<1/ <td></td> <td><u>.</u></td> <td>49 32</td>		<u>.</u>	49 32		1,1-DCA	-/- 23 <20 <30	1122	1,000 ,1,000 ,1,000	1 1 2 2	- <1/<1	4<10<30	\$ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<1/<1	.	<10 <10		1,1-DCE	3,700/2,500 3,000 900 1,500	2007	38,000 88,000 18,000 56,000	360 1,200 170 360	7 4 3/3 <1	210 850 1,100	430 820	2/1	77	<1 <10		SAMPLE DATE	03/27/87 04/13/87* 11/12/87 07/13/89 08/23/89	11/02/87 11/12/87 07/13/89 08/23/89	11/02/87 11/12/87 07/13/89 08/23/89	11/02/87 11/12/87 07/13/89 08/23/89	11/30/87 01/08/88 07/13/89* 08/23/89	10/6/89 07/13/89 08/23/89	07/13/89	10/6/89 07/13/89* 08/23/89	07/25/89 08/23/89	07/25/89 08/23/89		WELL I.D.	WCC-1S	WCC-2S	WCC-3S	WCC-4S	WCC-5S	WCC-6S	WCC-8S	WCC-9S WCC-10S	WCC-1D	WCC-3D
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	WELL I.D.	WCC-1S	WCC-2S	WCC-3S	WCC-4S	WCC-5S	WCC-6S	WCC-8S	WCC-9S WCC-10S	WCC-1D	WCC-3D																																																		

* Duplicate sample also analyzed -- Not Detected (Detection limit not specified)

APPENDIX A

FIELD PROCEDURES
AND
AQUIFER TESTING DATA ANALYSIS

APPENDIX A

FIELD PROCEDURES AND AQUIFER TESTING DATA ANALYSIS

A.1 GENERAL INFORMATION

Drilling was performed by two companies: A&R Drilling, Inc. of Carson; and Beylik Drilling, Inc. of La Habra California. Drilling began on 5 June 1989 and was completed on 30 June 1989. Soil sample borings and shallow observation well borings were drilled using a CME-75 drill rig equipped with 6-1/2 inch O.D. hollow stem augers for soil sampling and 11-inch O.D. hollow stem augers for well installation. The deep observation well borings were completed by mud rotary drilling using an Ingersoll-Rand drill rig equipped with a 10-inch tri-cone drill bit.

A.1.1 Shallow Observation Well Installation

Observation Wells WCC-7S, 8S, and 10S were constructed of threaded 4-inch diameter, Schedule 40 PVC casing and screen to a depth of approximately 90 feet. observation wells were installed by first drilling a sampling borehole with the 6-1/2-inch outside diameter (O.D.) hollow stem augers. In general, soil samples were collected at near-surface, 5 feet and then at approximately 5 foot intervals. Next, these augers were removed from the boring and the 11-inch O.D. hollow stem augers with a wooden plug placed in the bottom were used to ream out the boring to its total depth of 90 feet. Upon reaching total depth the inside of the augers were quickly filled with tap water and the wooden plug was knocked out of the bottom auger. The water was used to form hydrostatic pressure in the augers to help hold out the surging sands which would otherwise fill up the inside of the bottom augers and prevent a proper well installation. After knocking out the wooden plug, the 4-inch diameter wells were installed by inserting the casing into the hollow stem auger and allowing the well casing to rest on the bottom of the boring. Filter pack material (Lone Star No. 0/30) was poured from the surface into the annulus between the casing and hollow stem auger. As filter pack material was introduced into the borehole, the hollow stem augers were slowly withdrawn from the hole to allow the filter pack to fall in place between the well casing and native soil. The same procedure was followed in placing the bentonite plug and the volclay grout backfilling.

A.1.2 Deep Observation Well Installation

Observation Wells WCC-1D and WCC-3D were also constructed of threaded 4-inch diameter, Schedule 40 PVC casing and screen and set to a depth of approximately 140 feet. The wells were installed by first completing a sampling borehole using a wire line coring system which was used to attempt continuous coring from 120 to 140 feet. This sampling system worked satisfactorily on WCC-3D, but had little success in WCC-1D. After completing the sampling borehole, the geologic formation was electrically logged (E-logged) by Geo-Hydro-Data, Inc. of Tehachapi, California. Next, the boring was reamed out to the total depth with a 10-inch diameter drill bit.

Once the boring was completed for the casing installation, the drilling mud was thinned to help break down the mud cake formed on the sidewalls of the boring. In both WCC-1D and WCC-3D the mud was thinned too much on the first attempt, and the boring sidewalls caved in and had to be redrilled. The well casing was placed down the 10-inch boring with centralizers installed at five locations along its length to keep it centered in the boring and not laying against the sidewalls. Filter pack sand was placed outside the screened interval of the casing using 1-1/2 inch diameter tremie pipe

and washing it down with tap water. A bentonite plug was set in the boring on top of the filter pack by pouring 1/4-inch bentonite pellets directly into the boring.

After allowing the bentonite pellets to settle into place the remainder of the annulus was backfilled by tremie pipe with volclay grout up to 8 feet below the surface. The top 8 feet of the annulus was backfilled with concrete.

A.1.3 Well Construction

The observation wells were constructed of 4-inch O.D. Schedule 40 PVC flush-threaded blank pipe, and screened with 0.010-inch slotted PVC screen. Adhesives were not used. The shallow wells were installed with 70 feet of blank casing and 30 feet of screen. The deep wells were installed with 120 feet of blank casing and 20 feet of screen. The well screen was filter packed by pouring or treming the filter material into the borehole from the surface. A filter pack material of Lone Star No. 0/30 sand was selected based on a field sieve analysis. Filter pack analysis and design procedures are discussed in Section C.4. The filter pack was placed from the well bottom to about 5 feet above the top of the well screen.

An approximately 5-foot thick bentonite pellet plug was placed on top of the filter pack, to minimize movement of fluids through the annular space. In addition, volclay bentonite grout was placed in the annulus from the top of the bentonite plug to approximately 8 feet below ground surface. A concrete plug was placed from the top of the volclay to the surface, to minimize seepage of surface fluids into the well and to provide strength to the backfill. The top of the well casings were completed 3 to 6 inches below grade with a waterproof locking well cap and protected with a moisture resistant steel traffic-rated

Christy box. Figure A.O is a schematic of the general observation well design. Appendix D presents the boring logs and graphic well construction details.

A.1.4 Soil Borings

Four soil borings, B-6 through B-9, to collect soil samples for chemical analysis and lithologic logging, were completed in the vicinity of the underground tank cluster, 15T through 18T. Each boring was completed to a depth of 65 feet.

Soil sampling as described in Section A.2 was completed in each boring just below the surface, and at 5-foot intervals to the total depth of each boring.

A.1.5 Soil Boring Backfill

Soil borings B-6 through B-9 were backfilled with silica sand and bentonite powder, at a ratio of 4 to 1. The top 1 to 2 feet of the borings were backfilled with asphalt.

A.2 SOIL SAMPLING

Soil samples were collected at 5-foot intervals in the soil borings and the shallow well borings to make observations regarding subsurface stratigraphic conditions and the presence of contamination, to perform field headspace tests, and to conduct laboratory analyses. Soil samples were collected using a modified California sampler that contained four brass tubes. The brass tubes were filled by driving the sampler 18 inches into undisturbed soil with the drop hammer. The number of blows required to drive the sampler 12 inches was recorded on the boring log and used to evaluate the density or consistency of the soil.

Additional soil sampling was completed for logging purposes only in the deep well borings beginning at 120 foot depth

and continuing to 140 feet. This sampling was performed using a wire line coring system which had a 2-inch diameter by 5-foot long split barrel sampler.

A.2.1 OVA Headspace Measurements

In general, one brass tube from each sample was extruded and placed into a sealable plastic bag. The bag was sealed and after approximately 5 to 10 minutes, an organic vapor analyzer (OVA) probe was inserted into the bag, and the vapor concentration in the headspace was measured and recorded on the boring log.

A.2.2 Soil Sample Preparation

One to two tubes from the soil sampler were prepared for laboratory analysis. The ends of the tubes were covered with aluminum foil, plastic end caps, and sealed with electrical tape. Soil samples were labeled with the following information:

- o Project number
- o Project name
- o Boring number
- o Sample number
- o Soil depth
- o Date
- o Sampler's initials

The soil samples were then sealed in Ziploc plastic bags and placed on ice in an ice chest. All of the soil samples were delivered to West Coast Analytical Service, Inc. in Santa Fe Springs, California for analysis. Chain-of-custody procedures, including the use of sample identification

labels and chain-of-custody forms were used for tracking the collection and shipment of soil samples. Copies of the chain-of-custody forms are presented in Appendix C.

A.2.3 <u>Drilling Residuals</u>

Drill cuttings from the soil borings and the shallow well borings were placed in Department of Transportation (DOT) Class 17H 55-gallon drums, and the contents of the drums labeled using a permanent ink marker spray-painted inventory number corresponding to an inventory list compiled by the field engineer. The drums were sealed and stored inside the facility hazardous waste storage area. Drilling mud and soil cuttings produced during installation of the two deep observation wells were pumped into separate roll-off bins next to the wells. Douglas Aircraft was advised of the locations and contents of the drums, and the need for proper management of the drill cuttings.

A.3 FIELD OBSERVATIONS

Observations by Woodward-Clyde Consultants' personnel during the drilling, sampling, and well installation operations were recorded on boring logs, as presented in Appendix B. These observations related to visual soil classifications, geologic and stratigraphic sample descriptions, observation well construction details, sampling efforts, OVA measurements, and other pertinent information.

A.4 FILTER PACK ANALYSIS

The selection of the proper filter pack material and well screen slot size is essential in collecting a sediment-free or low sediment content water sample. In all observation wells, soil samples were collected for sieve analysis. Filter pack design calculations were made based on the grain size distribution of these finest grained soil samples

collected within the designed screen interval and below the ground water table. For observation Wells WCC-1D, 3D, 7S, 8S, and 10S the depths of the samples analyzed were 123, 122, 75, 75, and 80 feet, respectively.

Soil sieve analyses for selection of well screen slot and filter pack size were conducted in the field. Each soil sample was heated with a portable propane stove to evaporate water from the soil. When the sample was dry, it was weighed on a scale to the nearest gram. The soil sample was then poured into the top of an eight sieve stack and shaken for approximately 5 minutes. The sieve sizes used in the analysis are shown in Figure A-1. The soil retained in each sieve was weighed and the cumulative percent retained was calculated for each sieve. The gradation analyses for the wells are illustrated in Figures A-1 through A-5.

A well design using a Lonestar No. 30 sand filter pack and a screen slot width of 0.01 inches (10 slot) was used for the five wells based on the gradation analyses. An ideal gradation of filter pack and screen slot width are plotted on Figures A-1 through A-5 along with the actual material These ideal sizes were calculated using the sizes used. well design formulas presented in "Ground Water and Wells" by Driscoll, 1986." A commercially blended filter pack material was then selected that best matched the calculated filter pack curve, since custom made filter pack materials were not readily available. The grain size analysis curves for Wells -1D, -3D, -7S, -8S, and -10S were similar, and the soils were classified as silty sands to sandy silts. lithologic classification also correlated with the field descriptions of WCC--1D, -3D, -1S, -2S, -3S, and -4S.

A.5 WELL DEVELOPMENT

Observation Wells WCC-7S, -8S, -1OS, -1D, and -3D were developed by Howard Pumps, Inc. of Barstow, California. Development occurred on 5 through 7 July 1989. During this development WCC-1D was damaged by breaking the bottom plug out of the well while bailing. Due to the formation conditions, sand surged up about 8 feet into the casing. This damage was repaired on 20 July 1989 by filling the well casing with drilling mud and then bailing the sand out of the bottom. Then a 2-foot plug of bentonite clay was set in the bottom of the well by pouring dehydrated bentonite pellets down the well and allowing them to hydrate. Once the pellets had hydrated, and formed a new bottom plug, the well was redeveloped.

All of the wells were developed, first by bailing and surging, to remove the maximum amount of sediment possible. Next the wells were pumped by submersible pump to remove a large volume of water and assure the ground water around the well was formation water which had not been affected by the The two deep observation wells, WCC-1D well installation. and -3D, required a greater effort in their development because they were installed using mud rotary drilling. Table A-1 the development times, and the ground water volumes removed during development are presented. removed from each well was observed to become clearer during development and was completely clear upon completion of wells during from the Water removed development. development was stored in one large, steel, temporary "Baker" storage tank on site near Building No. 41, prior to treatment and discharge.

A.6 GROUND WATER SAMPLING

Two rounds of ground water sampling were completed from all ten of the observation wells. On 11, 12, 24, and 25 July 1989 the first round of sampling occurred (the two deep observation wells were sampled on the later two dates due to the damage of WCC-1D), and on 21 through 23 August 1989 the second round of sampling was completed.

Prior to beginning sampling procedures the static ground water level was measured in each well to the nearest one hundredth of a foot using an electronic well sounder. Then each well was purged, to remove possible stagnant water, by evacuating a minimum of three casing volumes of ground water. This was accomplished by bailing the well with a 3-1/2-inch-diamter PVC bailer attached to new polypropylene rope. The exception to this was the purging of WCA-1D and -3D on the first round of sampling only. These wells were purged by setting a submersible pump in the well and pumping a large volume of water for a final effort in development.

Throughout purging, and just prior to sampling the wells, pH, electrical conductivity or total dissolved solids, and temperature were measured and recorded for the evacuated ground water (Table A-2). These measurements were made to confirm that the wells were purged sufficiently. Sampling was done with a 1-1/2-inch-diameter Teflon bailer suspended from a monofilament line. Water samples were collected from each well in two 40 ml VOA vials.

In addition to water samples, bailer rinse samples were also collected in two 40 ml VOA vials for each well prior to collecting the water samples. The rinse samples were collected for possible analysis to confirm the sampling equipment was satisfactorily decontaminated.

The water samples, rinse samples, and two 40 ml VOA trip blanks for each sampling round, were packed on ice in a portable chest immediately after collection. Samples were delivered on the day following collection to West Coast Analytical Services. Chain-of-custody procedures, including the use of sample identification labels and chain-of-custody form, were used for tracking the collection and delivery of the samples. The chain-of-custody form is presented in Appendix C.

A.7 EQUIPMENT DECONTAMINATION PROCEDURES

Soil and ground water sampling equipment was decontaminated between sampling events using the following procedure:

- Brush-assisted water rinse to remove soil and mud (soil sampling only)
- 2. Water wash with Liquinox
- 3. Deionized water rinse to remove Liquinox
- 4. Second rinse with deionized water
- 5. Dry with paper towels (soil sampling only).

Prior to use at the site, the brass tubes used in the modified California sampler were cleaned in WCC's laboratory by washing sequentially in dilute sulfuric acid, Liquinox and water, and deionized water. The tubes were then air dried, and stored in sealable plastic bags prior to use at the site. New end caps were carried to the site in sealable plastic bags.

Drill augers or pipes, pumps, bailers, surge blocks, and cables were all steam cleaned prior to working on each boring or well. Steam cleaning was performed by the drilling companies on the facilities steam cleaning pad.

A.8 SLUG TESTING

Slug tests were conducted on observation Wells WCC-4S, -5S, -7S, -8S, -9S, -10S, -1D, and -3D on 19 July, 30 August, and 4 October 1989. Slug testing is a relatively quick and cost-effective method of measuring actual field hydraulic conductivity (K) values. Slug test derived hydraulic conductivity (K) values are not as accurate as aquifer pump test derived values, however, they are useful in preliminary calculations and in identifying large anomalies in hydraulic conductivity (K) values.

Slug tests only measure the average horizontal hydraulic conductivity (K) in the immediate vicinity of the well. In comparison a pump test stresses the aquifer at a greater radial distance, and as a result, a more representative hydraulic conductivity value (K) is obtained.

The slug tests were performed using the following equipment:

- o DL-120-MCP Envirolabs data logger with a 25 psi pressure transducer
- o One 3.25-inch diameter x 39-inch-long sand weig' mandrel with a 1.4 gallon volume
- o Steel tripod and polyethylene rope

The weighted mandrel was used with the tripod and rope to simulate a slug of water being inserted and withdrawn from the well. The pressure transducer and data logger recorded the subsequent drawdown and recovery water level measurements of the well. One cycle of drawdown and recovery was performed on each observation well.

Data from the slug tests were evaluated using the Bouwer-Rice method (June 1976) for calculating hydraulic conductivity (K). Bouwer and Rice developed a procedure

that considers the effects from partially penetrating wells, the radius of the gravel pack, and the effective radius of influence of the test.

The Bouwer and Rice method entails solving the following equation:

$$K = \frac{r_c^2 \ln(R_e/R_w)}{2Lt} \ln(Y_o/Y_t)$$

Where:

K = hydraulic conductivity

 r_c = radius of well casing

 R_a = effective radius of influence

 r_{m} = radius of the well boring

= length of screened interval or saturated thickness
if entire screen is not saturated

t = arbitrarily selected time from drawdown/time
 semi-log plot

Y = initial drawdown at time t = 0, from drawdown/ time
 semi-log plot

The term R_{\bullet}/r_{w} , which is a function of the radius over which the drawdown in the well is dissipated, was solved using the following equation:

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(H/r_w)} + \frac{A + B \ln[(D-H)/r_w]}{L/r_w}\right]^{-1}$$

Where:

- H = distance from base of well to Static Water Level (SWL)
- length of screen (or saturated thickness if entire screen is not saturated)
- D = thickness of aquifer
- A = constant based on value of L/Γ_w (see Figure A-22)
- B = constant based on value of L/r_w (see Figure A-22)

The test data were plotted on a semi-log diagram of drawdom (Y_t) versus time (t), drawdown being logarithmic (see Figures A-6 through A-21). The data should generate a straight line, although a flat "tail" is frequently observed. A drawdown (Y_t) is recorded for a selected time (t) within the straight line segment of the plot. Y_t and the are used in solving the equation for K.

The Bouwer and Rice method makes the following assumptions:

- 1. The aquifer is of constant thickness.
- 2. The soil is homogeneous and isotropic.
- 3. Flow is horizontal in the aquifer.

These assumptions are judged to be generally reasonable, recognizing that variations in aquifer thickness and anisotropic conditions will have an influence on calculate results.

A.9 PUMP TEST

The pumping well, WCC-4S, was selected because it is centrally located to the surrounding observation wells. In addition information collected during slug testing indicated the well would have a relatively high yield. Wells WCC-1S, -4S, -6S, -7S, -8S, -9S, and -1D served as observation wells.

Details of the well design for the existing ten shallow observation wells and the two deep observation wells are summarized in Table A-3. Depth of groundwater and distance to the pumping well is also included. Figure 2 shows the locations of the wells.

A 1-1/2 horsepower submersible pump was used to pump water from WCC-4S. The pump was switched on at 12:00 p.m. on 20 December 1989 and allowed to pump at 13.3 gpm for 16 hours and 30 minutes. At this rate the water level was nearly stable at a drawdown of approximately 6 feet.

The evacuated groundwater was stored in two 21,000-gallon transportable steel storage tanks. Storage requirements were estimated based on well development activities which indicated a maximum pumping rate of 4 to 5 gallons per Assuming a pumping rate of up to 10 gallons per minute, Woodward-Clyde initially ordered one storage tank and figured if and when a second storage tank was required, it would be more than 24 hours after the pumping began. Because the pumping rate was greater than 10 gpm the second storage tank would have been needed before the tank rental company could respond to our request, if the 13.3 gpm pumping rate was sustained. Therefore, the flow rate was reduced to 8.5 gpm for 4-1/2 hours. After the second tank was delivered to the site, the flow rate of 13.3 was resumed and maintained for the remainder of 30 total hours of The overall time weighted pumping rate was "pumping".

approximately 12.6 gal/min. The pump was switched off at 6:00 p.m. on 21 December 1989. Measurements in the pumping well and all the monitoring wells continued until WCC-4S had recovered 99 percent of its maximum drawdown, two hours after the pump was shut off.

Water was pumped to the surface and approximately 400 feet horizontally to the storage tanks. The volume of water pumped out of WCC-4S was measured by an in-line totalizer. A total of approximately 28,000 gallons of groundwater was evacuated.

Five of the monitoring wells WCC-4S, -1S, -7S, -8S, and -1D had pressure transducers installed and connected to one of three Terra 8 data loggers to automatically measure and to groundwater. In record the depth addition, Woodward-Clyde measured the depth to groundwater on regular intervals in all of the observation wells except WCC-1S, -4S, and -1D. This task was performed using a Soloni electric well sounder. In addition barometric pressure readings were collected at regular intervals throughout the pump test using a Swift, Model 477 barometer.

The data from each well showing a discernable reaction were analyzed using one or more of the following techniques: Recovery (Residual Drawdown) plot, Cooper-Jacob Time-Drawdown plot, and/or Distance/Drawdown plot. A summary of the results is previously presented in Table 2. Slug test values obtained earlier are included for reference.

The nearly instantaneous initial drawdown and the subsequent constant drawdown with time, precluded any valid analyses of the pumping stage drawdown in the pumping well WCC-4S.

Nevertheless the recovery data for the pumping well which did appear valid was analyzed using a residual drawdown plotting technique.

This technique utilizes a semi-log plot of the residual drawdown (in feet) vs. the ratio of t/t' (see Figure A-23) where:

t = time since pumping started

t' = time since pumping stopped

The differential change in water level (Δs) is thus obtained from the plot and used in the equation:

$$K = \frac{264Q}{\Delta s \cdot b} \tag{1}$$

where:

K = Hydraulic conductivity in gpd/ft²

O = Pumping rate, in gpm

 Δ_S = Differential change in water level during one log cycle of time, in feet

b = The aquifer thickness (20.65 feet at WCC-4S)

Data for the observation wells WCC-1S, -6S, -7S, and -8S were analyzed using the Cooper-Jacob Time-Drawdown techniq as shown on Figures A-24 to A-27. A calculation of μ (from the well function, Driscoll 1986) showed the technique would be appropriate in general. A Distance/Drawdown plot shows the change in drawdown as a function of distance from the pumping well. The equations used and the calculations are shown with the plot. Analytical methods used are discussed

in the literature (Driscoll, 1986; Walton, 1987). The fundamental equation for hydraulic conductivity is identical to Equation (1) above. Other equations include:

$$T = Kb \tag{2}$$

and

$$S = \frac{0.3Tt_o}{r^2} \tag{3}$$

where:

T = Coefficient of transmissivity, in gpd/ft

 $K = \text{Hydraulic conductivity in gpd/ft}^2 \text{ (Equation [1])}$

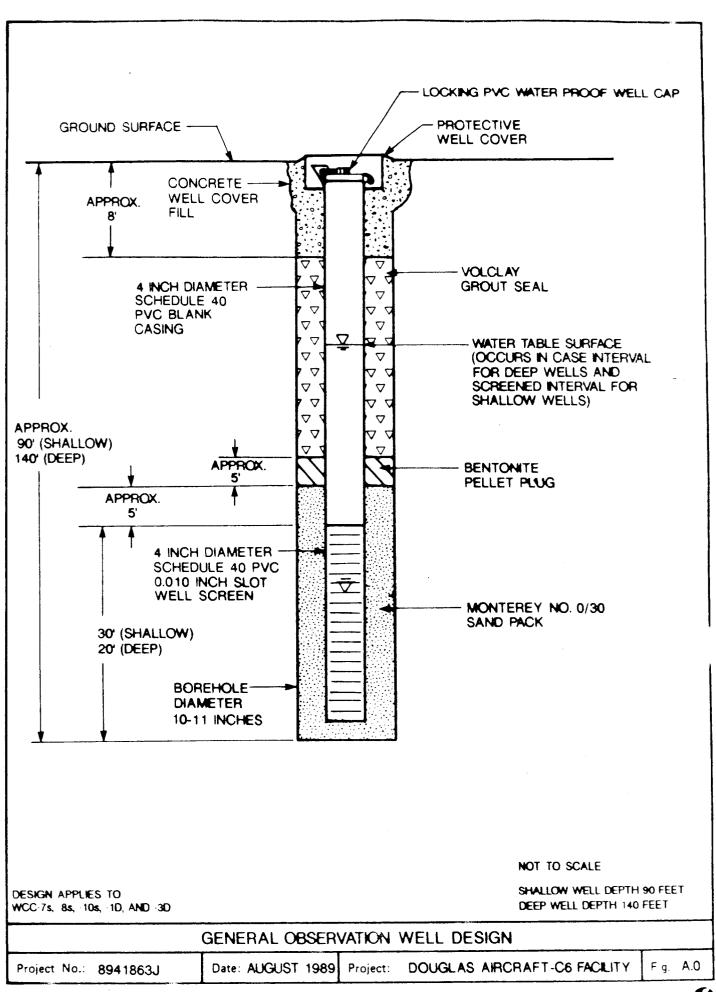
b = Saturated thickness of the aquifer tested in feet

S = Storage coefficient (dimensionless)

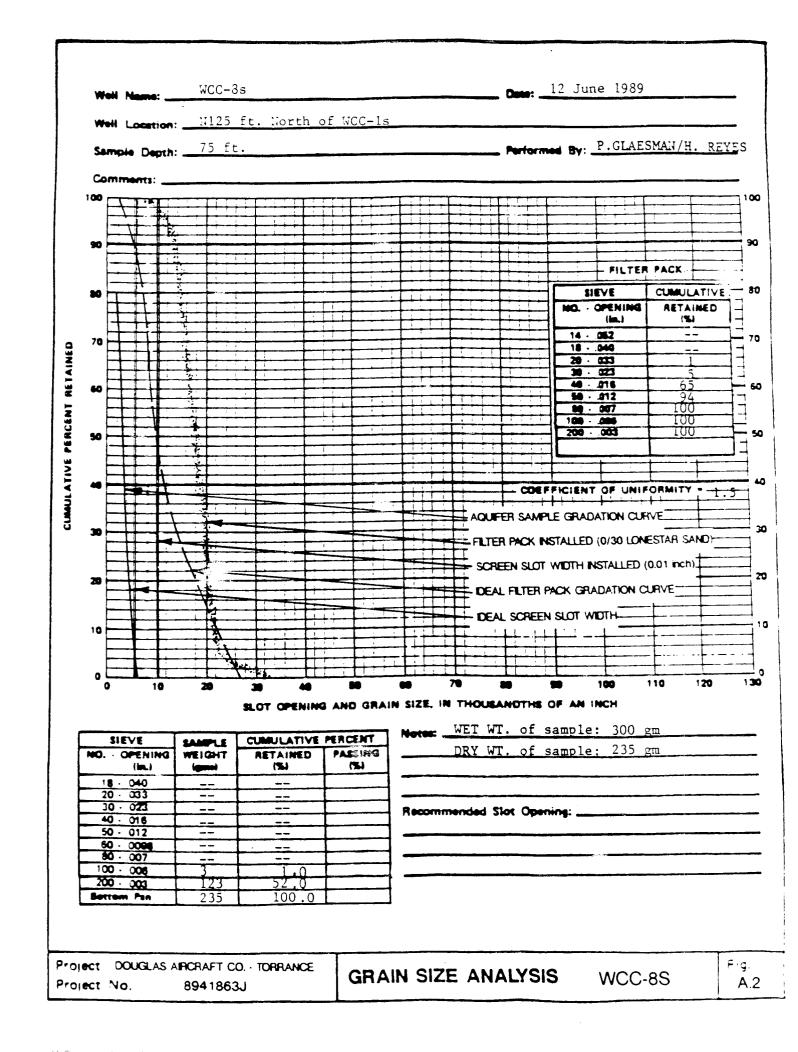
t_o = Time, in days, of the intercept of the extrapolated drawdown curve at zero drawdown

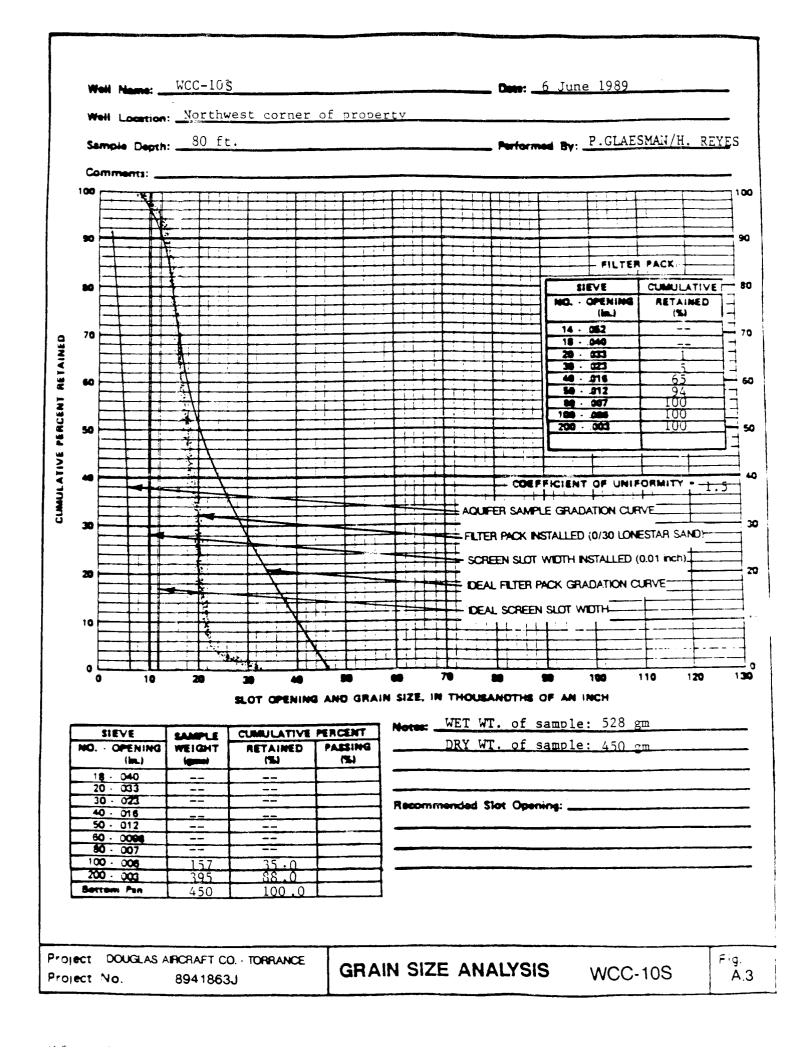
F = Distance, in feet, from pumped well to the
Observation well where drawdown measurements were
made

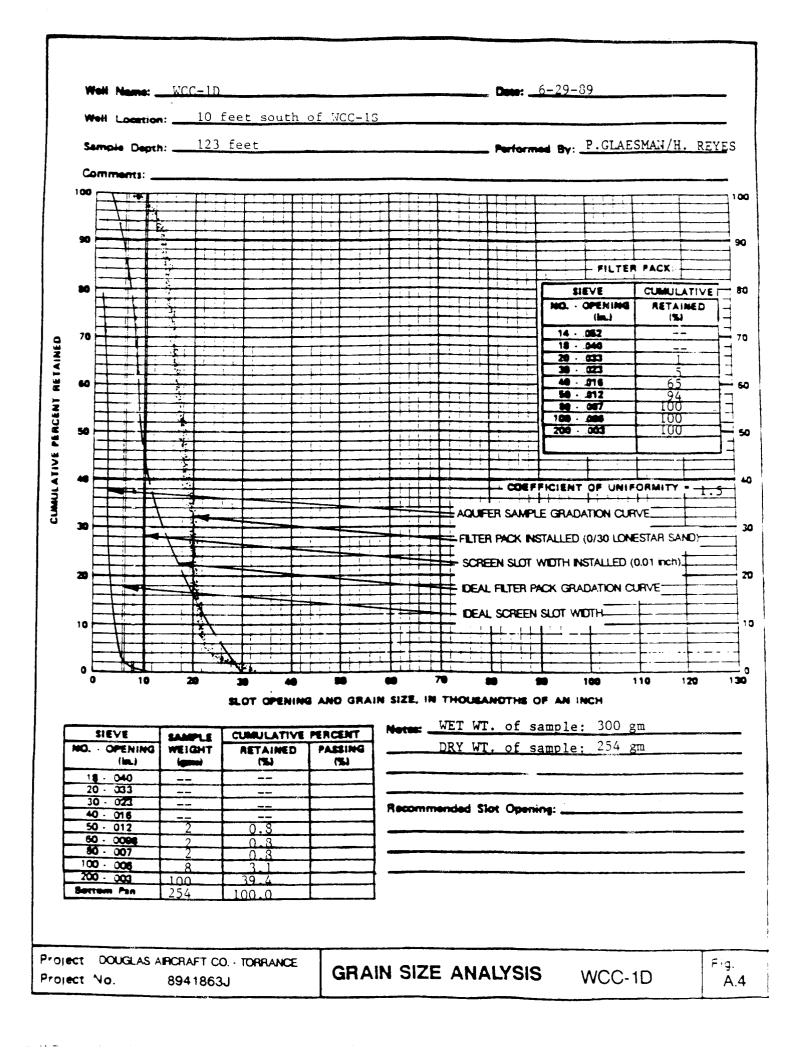
These plots allowed the calculation of both hydranic conductivity, and storage coefficient according to Equation (1) and (3). The method of plotting and the calculation are shown on Figure A-28.

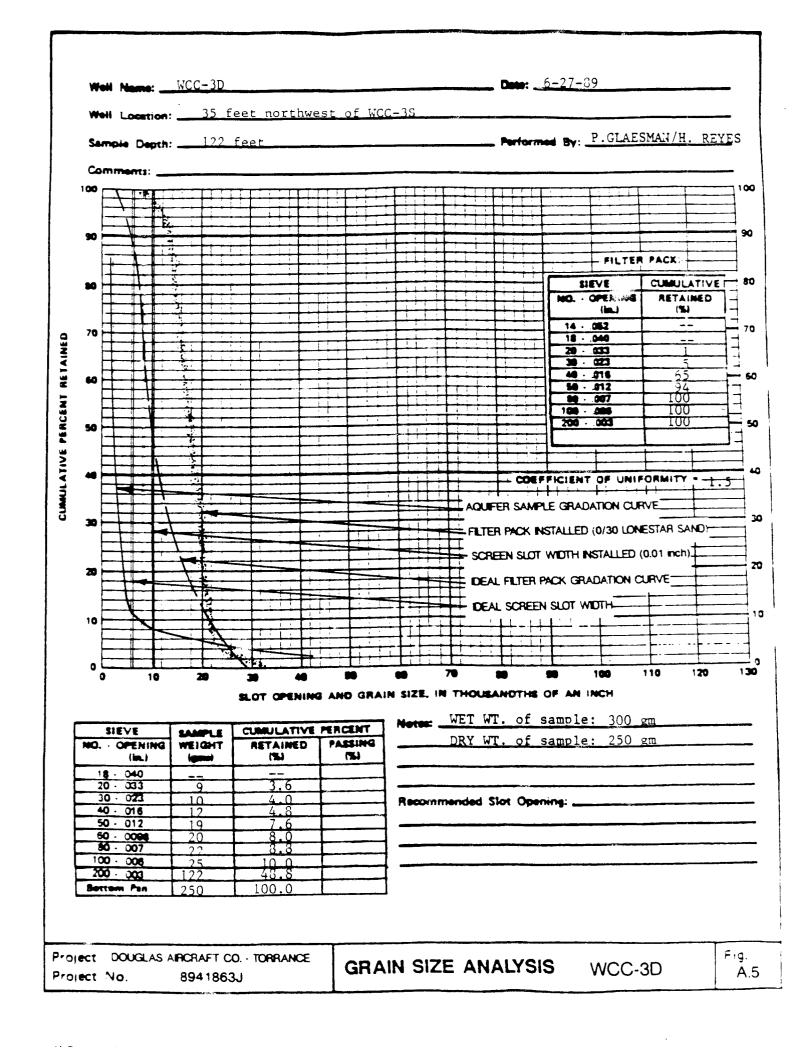


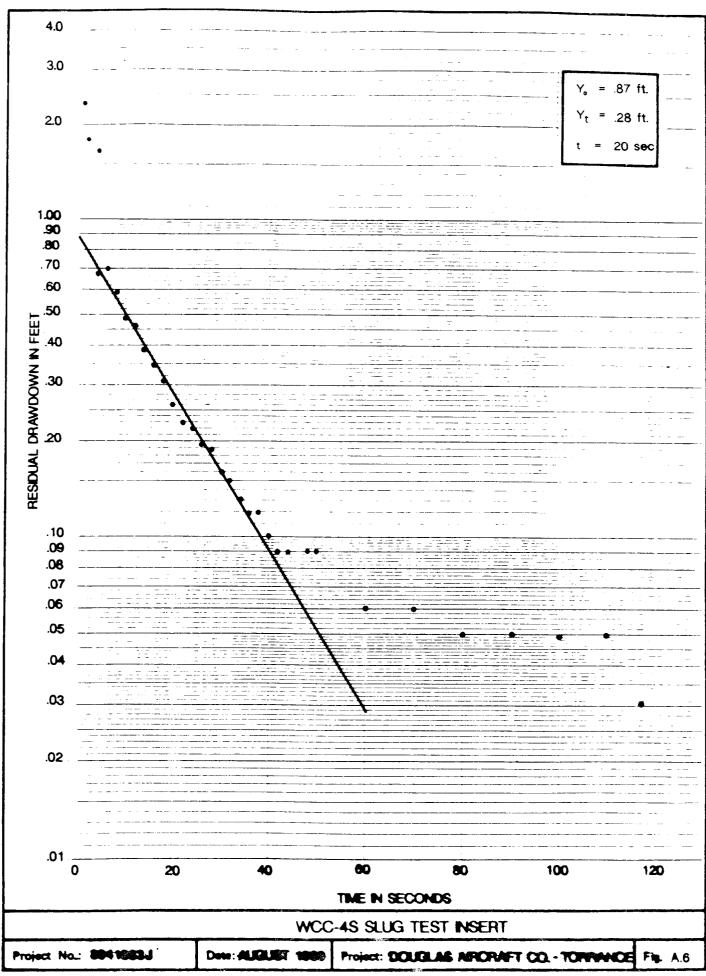
TOTAL CONTRACTOR	n: <u>160 f</u>	t. South of	f WCC-4s						
Sample Depti						Parforma	P.C	GLAESMAN	/H. RE
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1	7								
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60							44 · £16		65 94
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<u> </u>	<u> </u>								
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29					SCREE DEAL DEAL	en slot v Filter pa	VIDTH INSTA CK GRADAT SLOT WIDTH	LLED (0.01 in	
					SCREE DEAL DEAL	en slot v Filter pa Screen	Vioth insta CK Gradat Slot Wioth	LLED (0.01 in	
10					SCREE DEAL DEAL	EN SLOT V FILTER PA SCREEN	Vioth insta CK Gradat Slot Wioth	ILED (0.01 in	
SIEVE	20 SAMPLE	30 40 SLOT OPENIN	SS G AND GRA	on 7 in size, in	SCREE DEAL DEAL DEAL THOUSAN	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH 100 F AN INCH	ILED (0.01 in TION CURVE)	
SIEVE	200	30 40 SLOT OPENIN	SS G AND GRA	on 7 in size, in	SCREE DEAL DEAL DEAL THOUSAN	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH	ILED (0.01 in TION CURVE)	
SIEVE BO OPENING (in.)	20 SAMPLE WEIGHT	SLOT OPENIN CUMULATIVE RETAINED	SO G AND GRA	on 7 in size, in	SCREE DEAL DEAL DEAL THOUSAN	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH 100 F AN INCH	ILED (0.01 in TION CURVE)	
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SIEVE 80 OPENING (in.) 18 - 040 20 - 033 30 - 023 40 - 016	SAMPLE WEIGHT Ignor	SLOT OPENIN CUMULATIVE RETAINED	SO G AND GRA	ob 7	SCREE DEAL DEAL DEAL THOUSAN	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH 100 FAM INCH	ILED (0.01 in TION CURVE)	
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SIEVE 80. OPENING (im.) 18 · 040 20 · 033 30 · 023 40 · 016 50 · 012 60 · 0008 90 · 007	SAMPLE WEIGHT Ignor 5	SLOT OPENIN CUMULATIVE RETAINED (SL) 2.0	SO G AND GRA	ob 7	SCREE DEAL DEAL THOUSAN WET WT	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH 100 FAM INCH	ILED (0.01 in TION CURVE)	
SIEVE 60. OPENING (in.) 18 · 040 20 · 033 30 · 023 40 · 016 50 · 012 60 · 0006 50 · 007 100 · 006 200 · 003	SAMPLE WEIGHT Ignor	SLOT OPENIA SLOT OPENIA GUMULATIVE RETAINED (%)	SO G AND GRA	ob 7	SCREE DEAL DEAL THOUSAN WET WT	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH 100 FAM INCH	ILED (0.01 in TION CURVE)	
SIEVE 90 OPENING (in.) 18 - 040 20 - 033 30 - 023 40 - 016 50 - 012 60 - 0008 90 - 007	SAMPLE WEIGHT Ignor 5	SLOT OPENIN CUMULATIVE RETAINED (SL) 2.0	SO G AND GRA	ob 7	SCREE DEAL DEAL THOUSAN WET WT	FILTER PASCREEN SCREEN NOTHS O	CK GRADAT SLOT WIDTH 100 FAM INCH	ILED (0.01 in TION CURVE)	

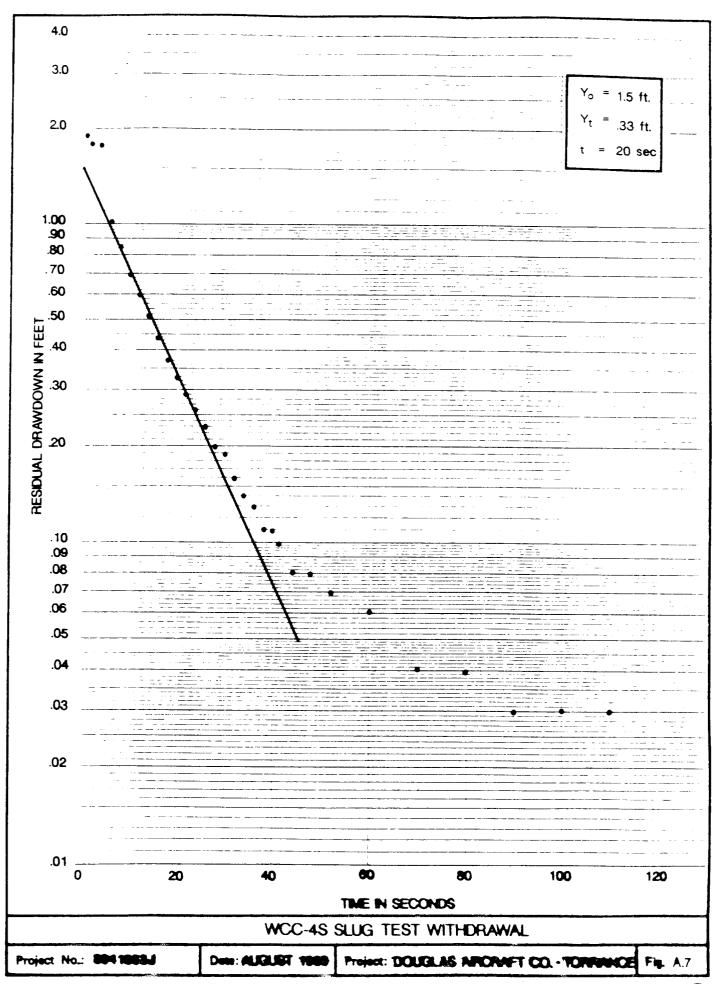


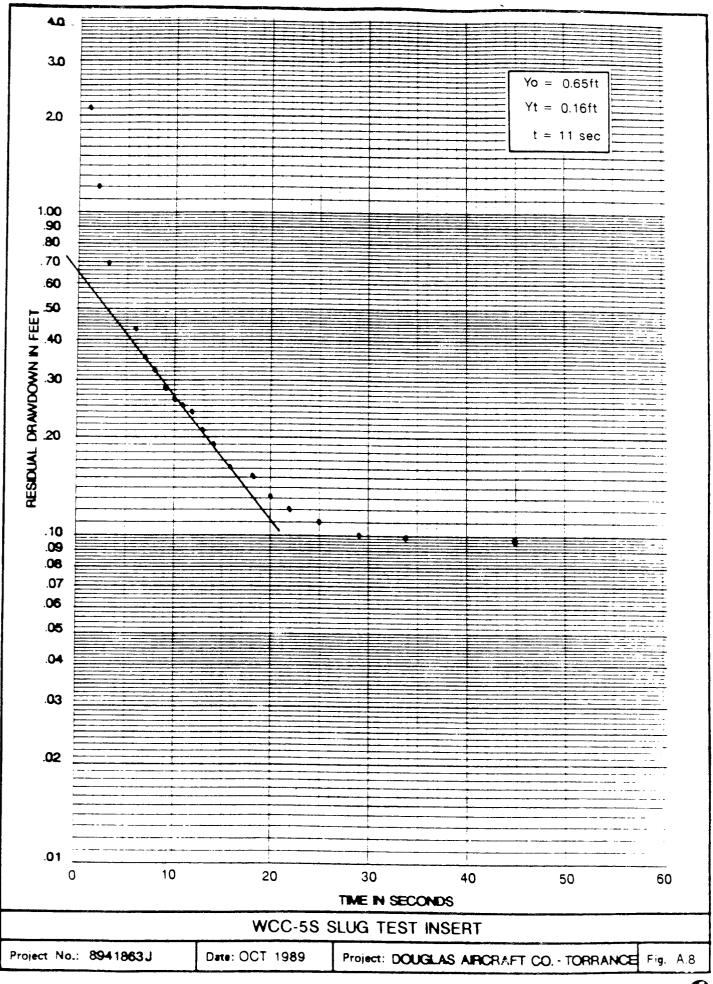


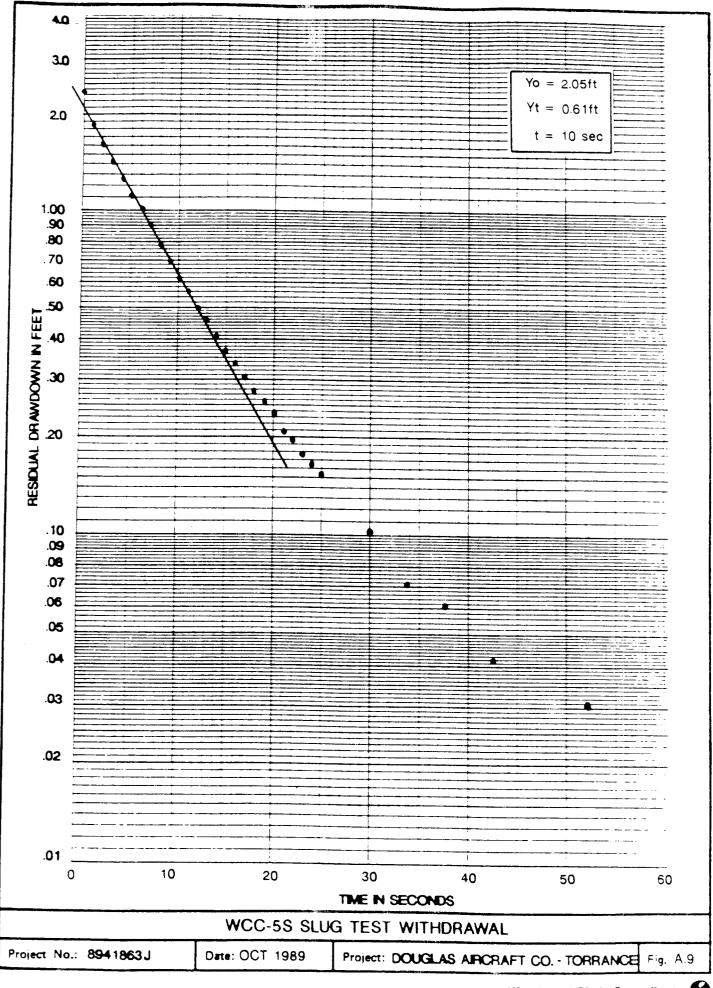


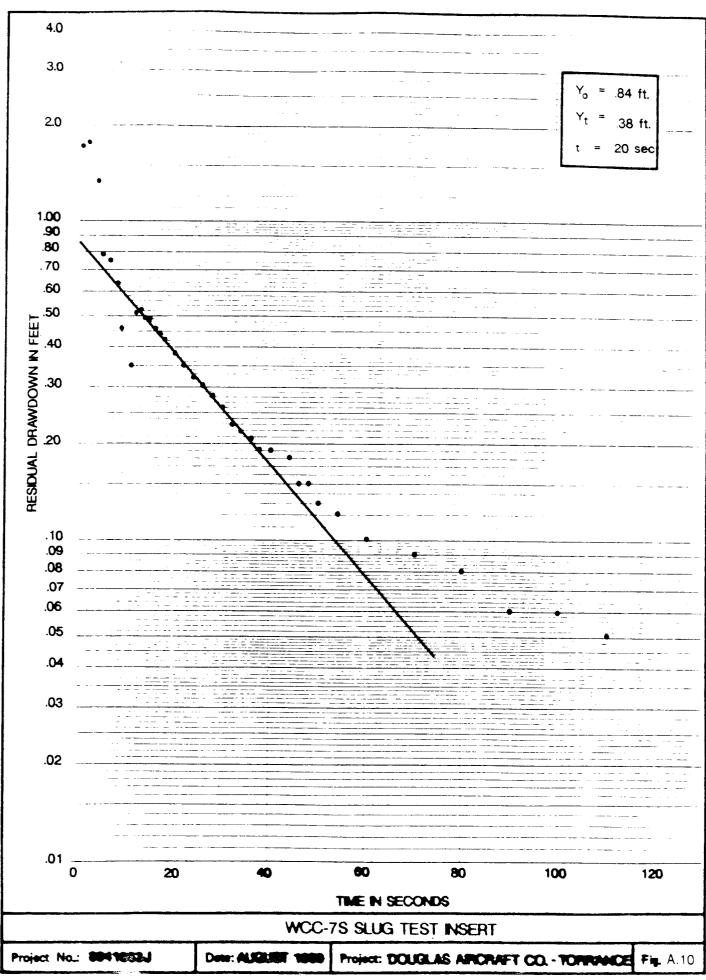


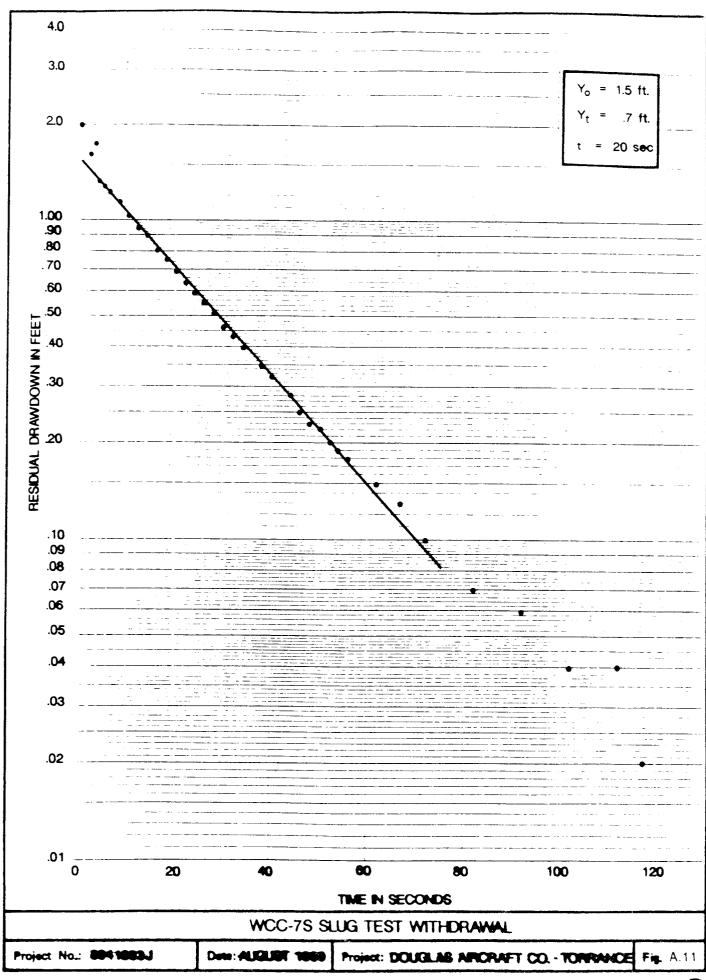


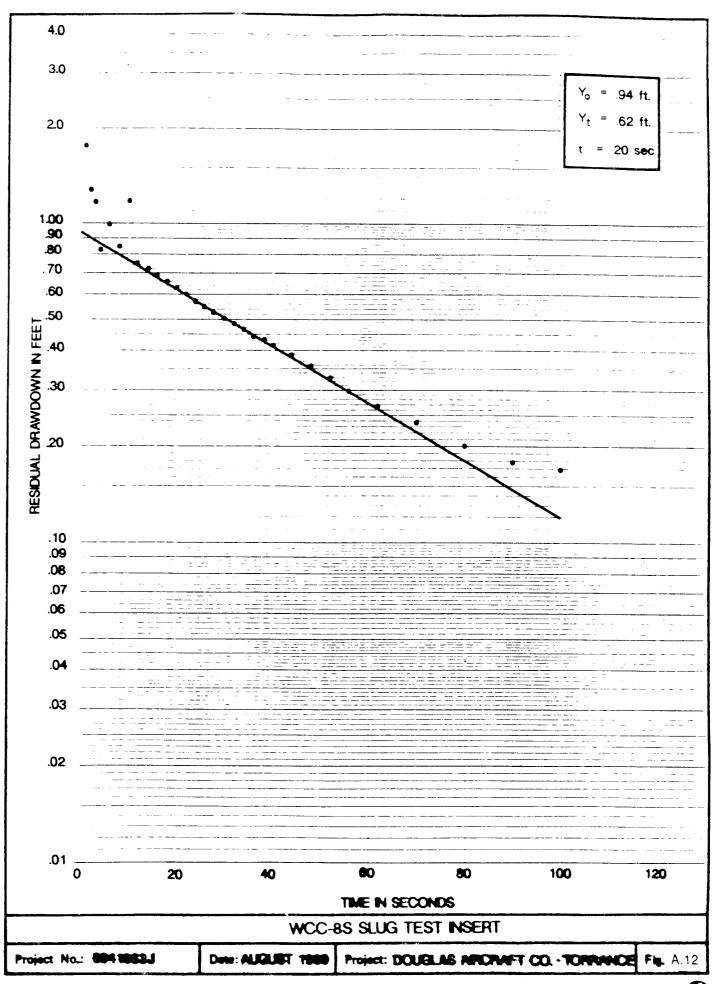


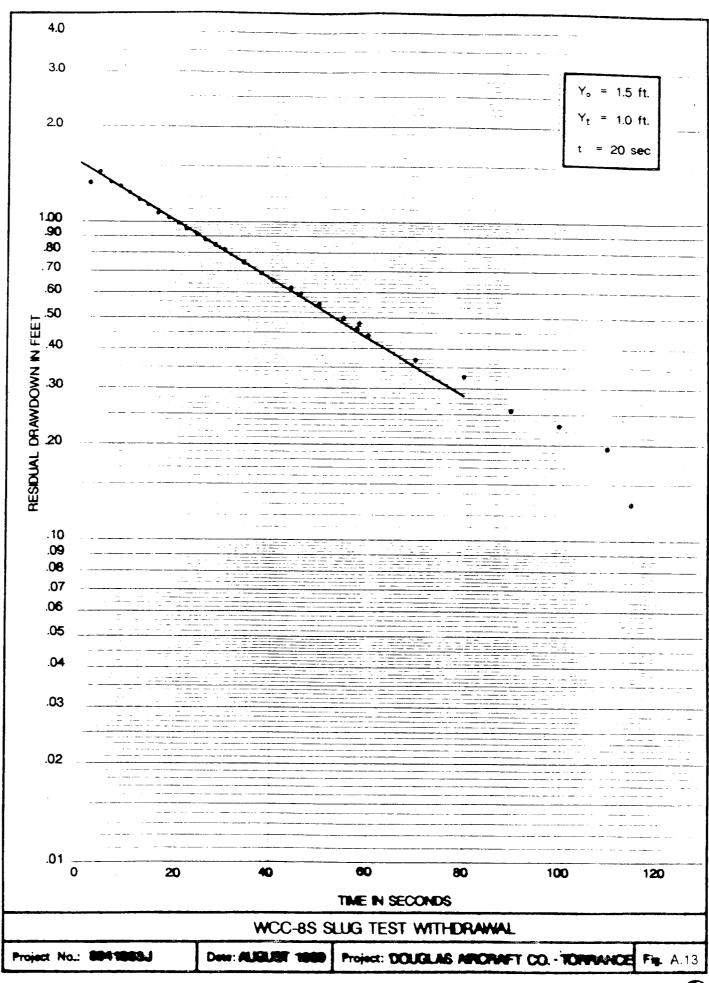


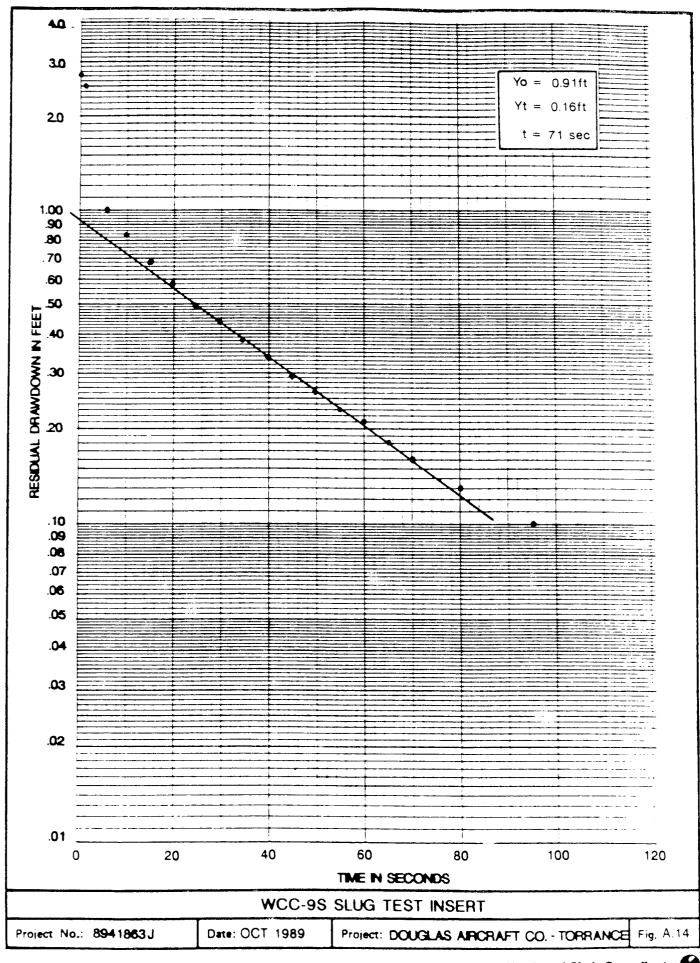


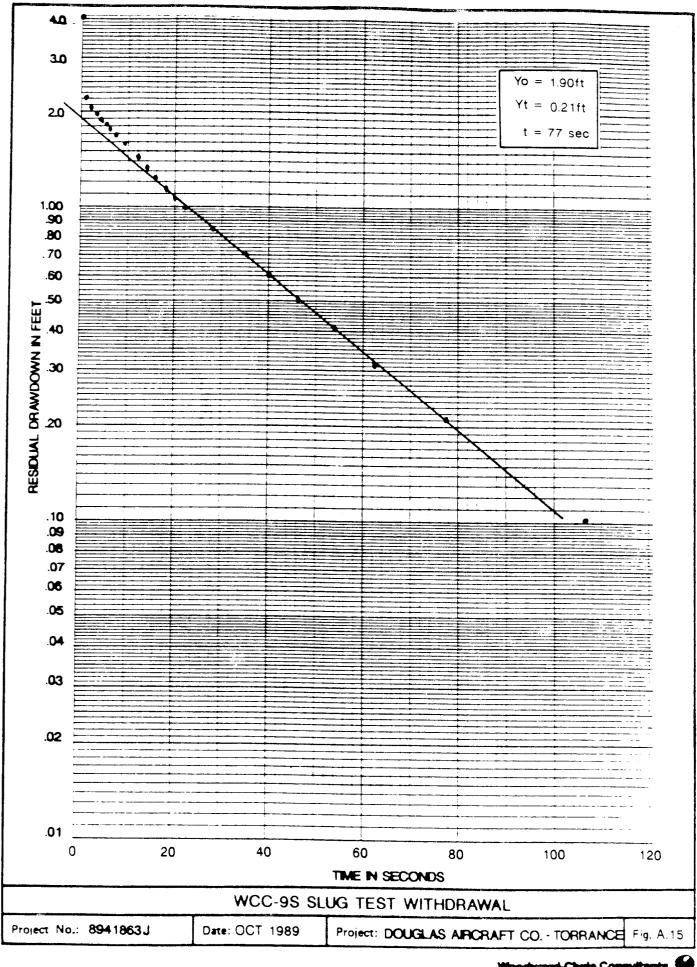


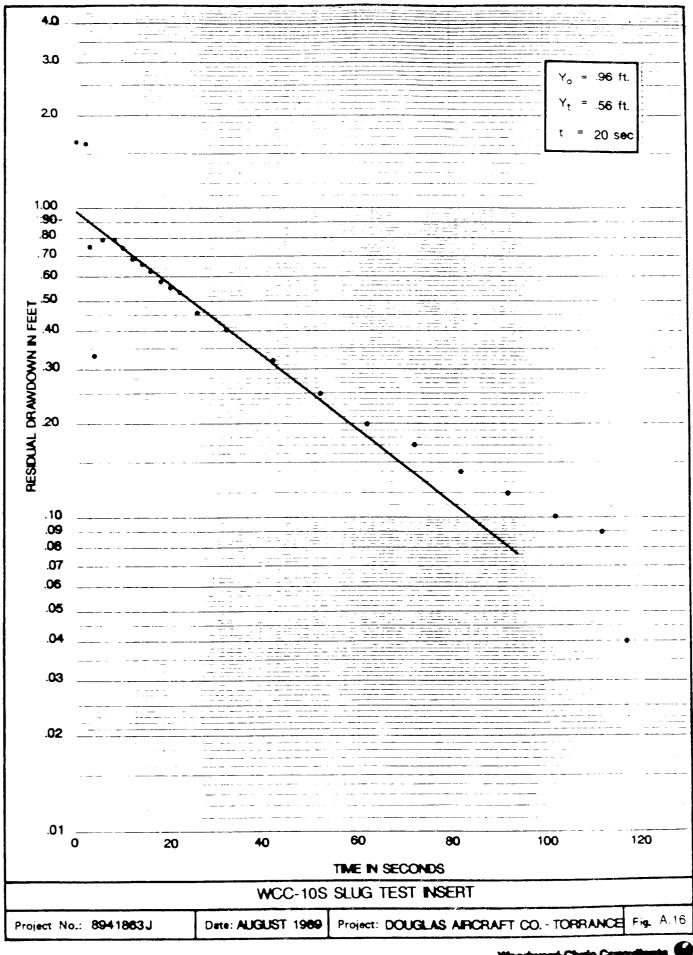


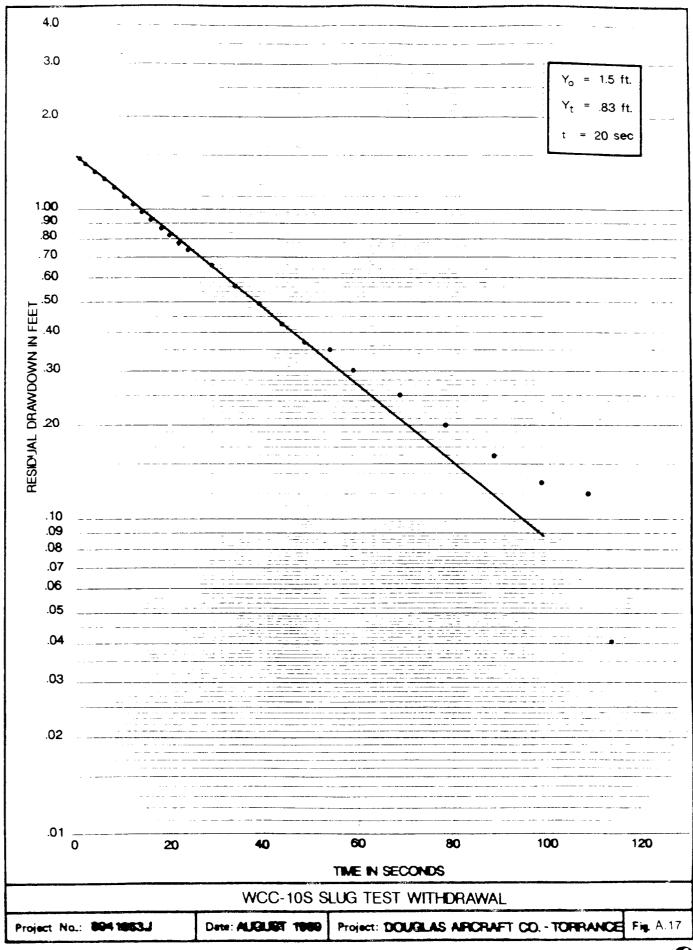


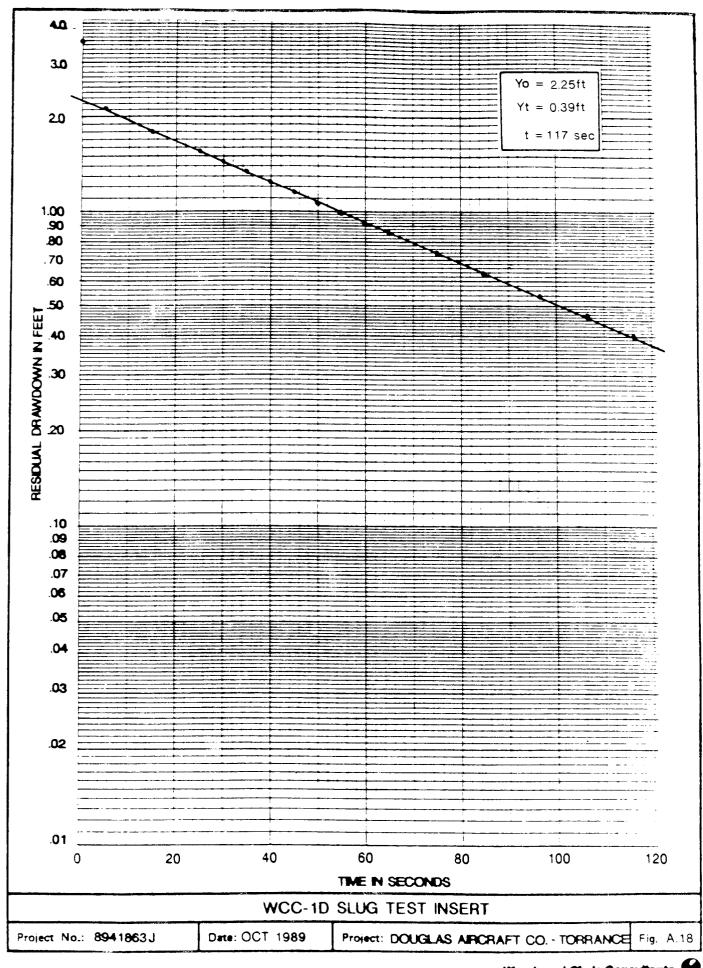


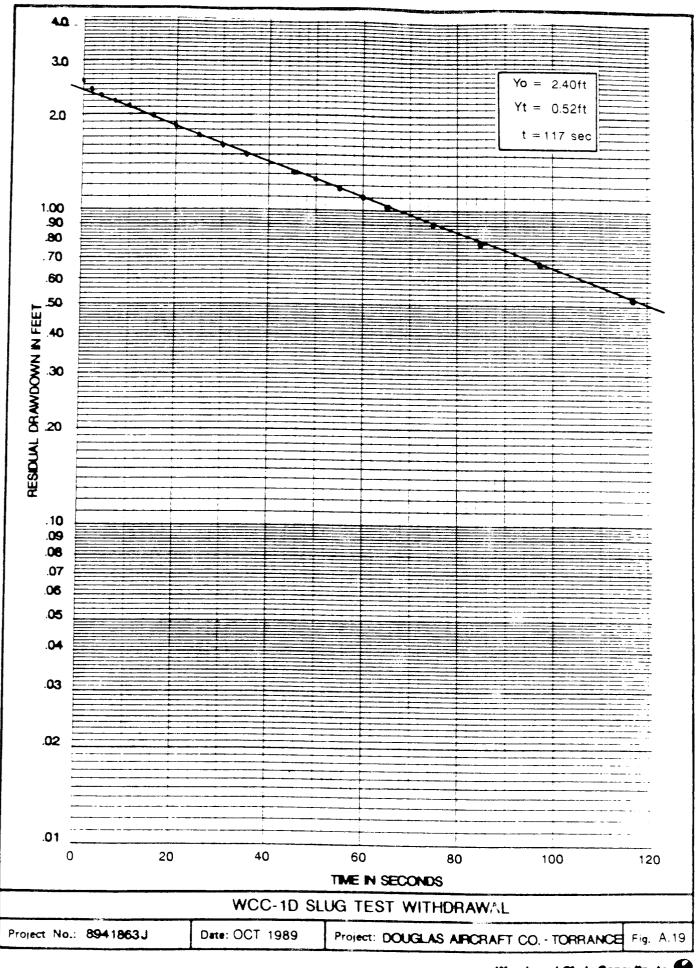


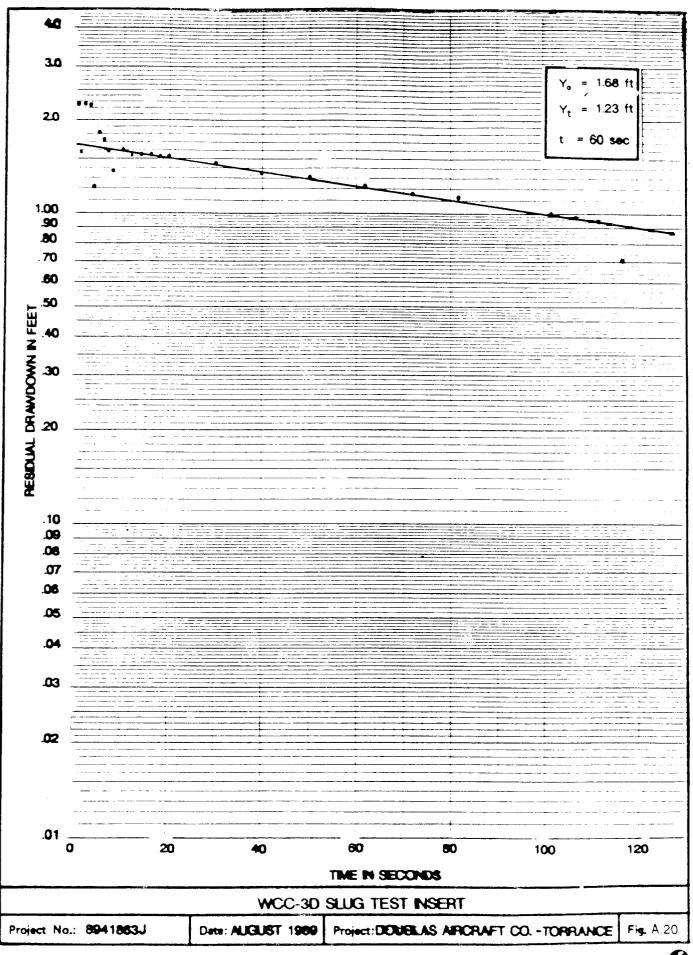


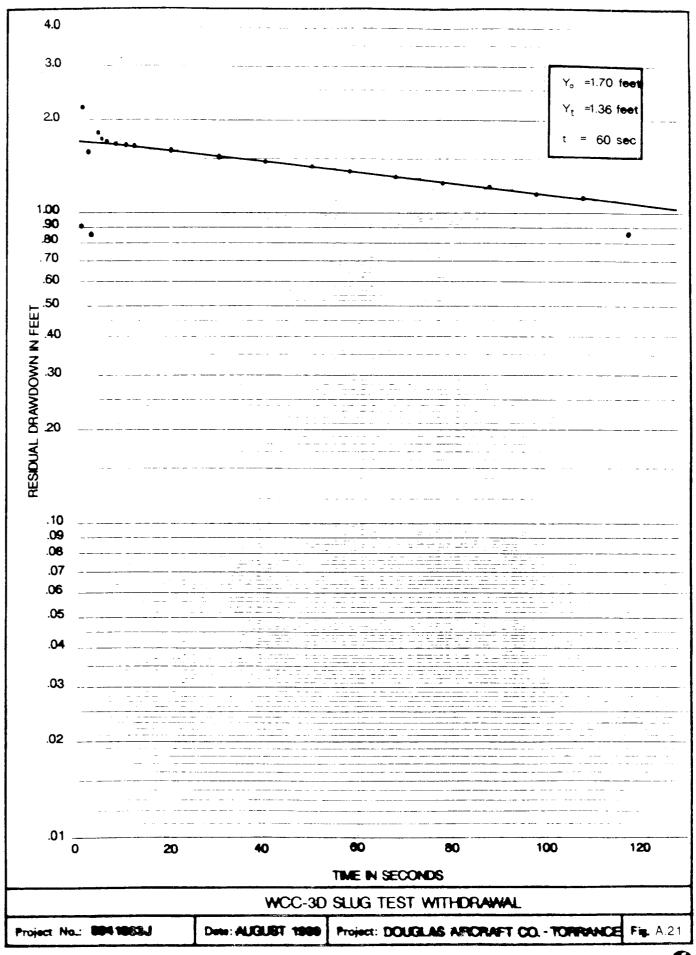


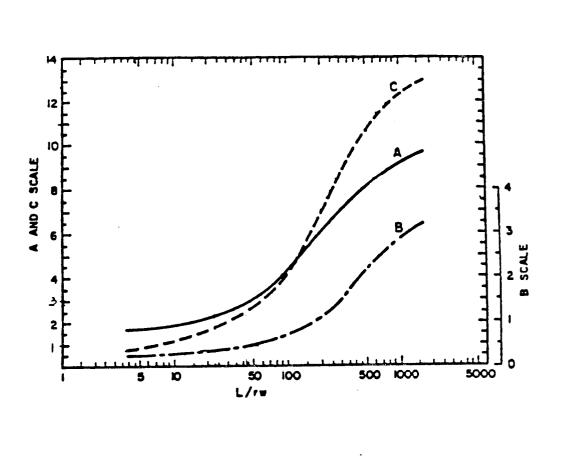




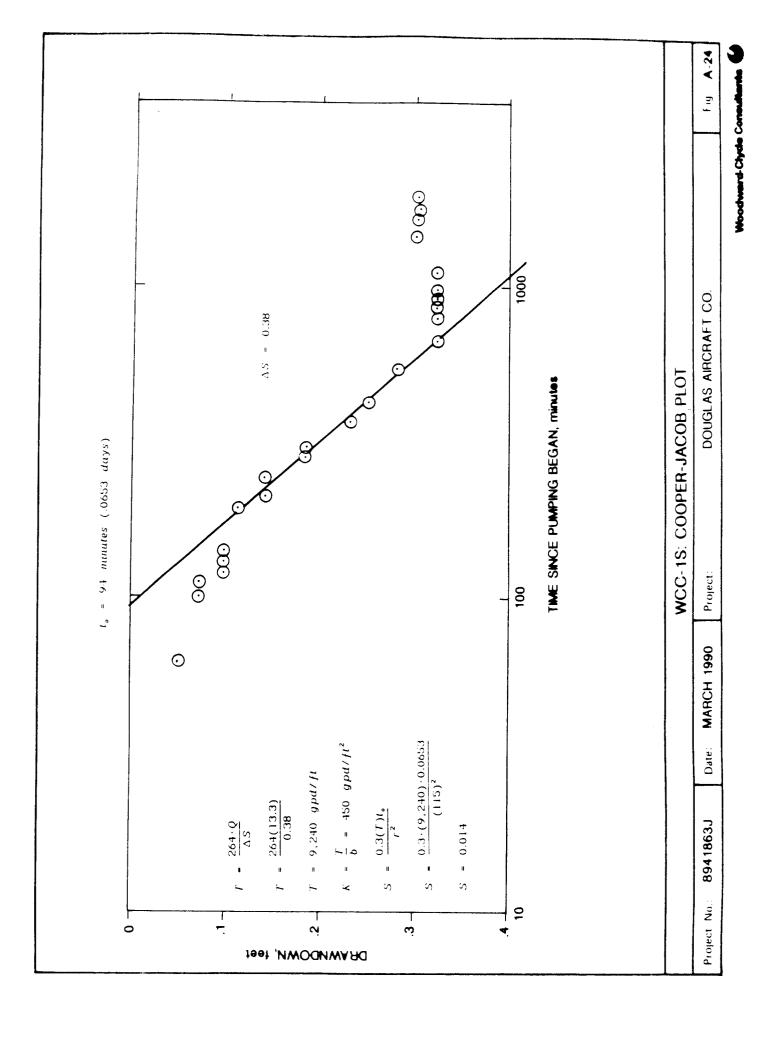


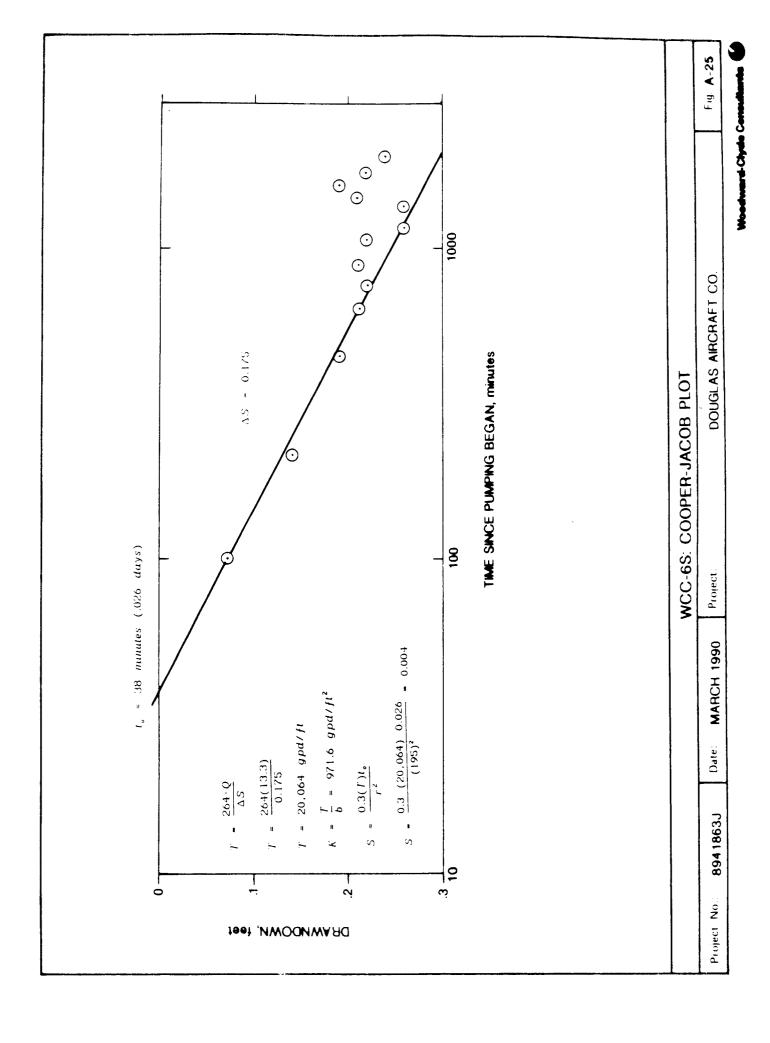


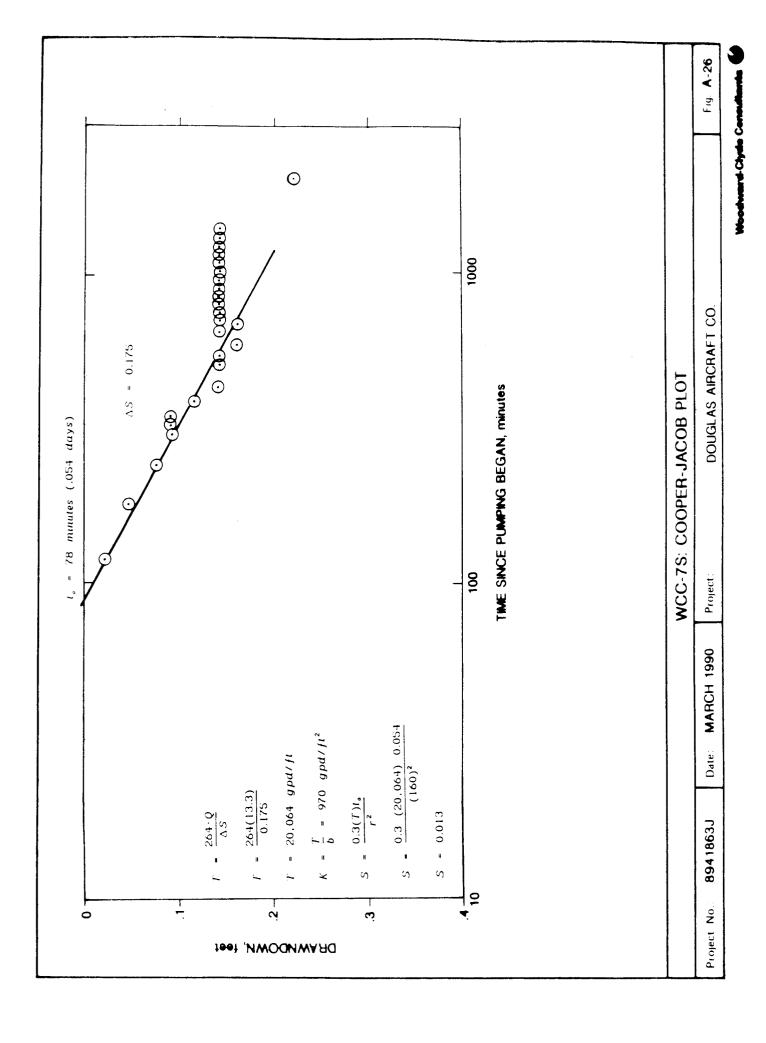


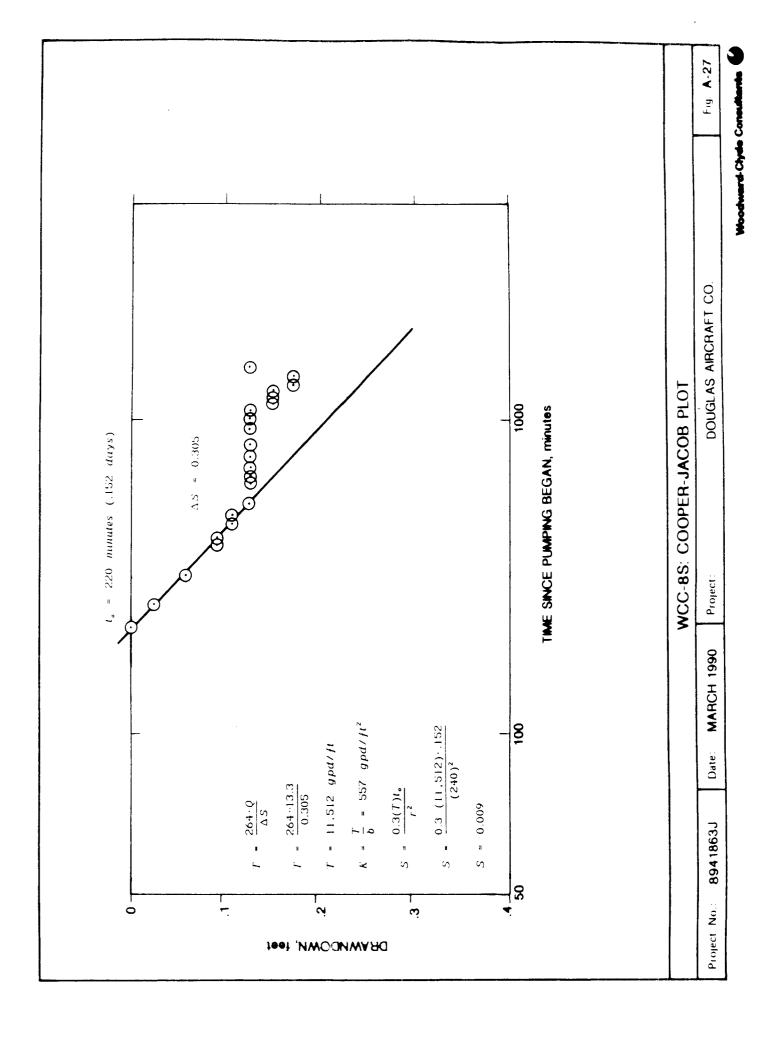


Bouwer and Rice A, B and C Coefficient Curves Project No.: 8941863J Date: AUGUST 1989 Project: DOUGLAS AIRCRAFT COMPANY Fig. A.22









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DRAWNDOWN, feet

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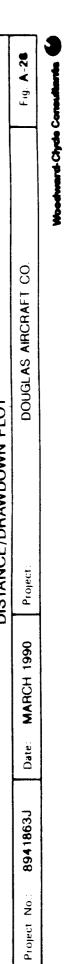


TABLE A-1
WELL DEVELOPMENT SUMMARY
DOUGLAS AIRCRAFT C6 FACILITY

Well Mo.	Sand Bailer and Surge Block Time (min)	Sand Bailer Volume Removed (gallons)	Pumping Time (min)	Pumping Volume Removed (gallons)	Total Removed (gal)	Comments
WCC-6S	15	45	75	400	445	Water became completely clear.
WCC-7S	60	100	70	500	600	Water became completely clear.
wcc-8s	55	70	90	430	500	Water became completely clear.
wcc-9s	15	60	70	310	370	Water became completely clear.
WCC-10S	95	190	45	370	560	Water became completely clear.
WCC-1D	15	40	540	1,170	1,210	Well was damaged by bailing on 7 July 1989. Well was repaired on 20 July 1989. Well was developed by pumping only, following repair.
wcc-3b	320	500			500	Water became slightly cloudy. Well was only pumped just before sampling, see Table A-2.

TABLE A-2
WATER SAMPLING DATA
DOUGLAS AIRCRAFT C6 FACILITY

Well No.	Sample Date	Sample Interval (gal)	Electrical Conductivity EC (µmhos)	Total Dissolved Solids TDS (ppm)	рН	Temperature F°
wcc-1s	7/12/89	1 4 6 8 10		490 560 540 580 540	9.0 7.2 7.2 7.2 7.2	74.5 74.7 74.3 74.7 74.3
	8/23/89 ·	2 4 6 8 10	1220 1320 1340 1330 1330		7.3 7.3 7.3 7.3 7.3	71.1 71.0 71.0 70.6 70.6
WCC-2S	7/11/89	15 25 35 40		310 320 320 320 320	7.3 7.2 7.2 7.2	72.1 72.0 72.0 71.6
	8/22/89	10 20 30 40	760 760 760 760		7.2 7.3 7.3 7.3	70.4 70.4 70.2 70.2
WCC-3S	7/12/89	10 20 30 40		550 550 560 560	6.8 6.7 6.7 6.7	73.9 73.4 73.4 73.4 73.4
	8/23/89	10 20 30 40	1270 1270 1280 1280		6.8 6.8 6.9 6.9	70.5 69.9 70.2 70.2
WCC-4s	7/11/89	15 25 35 45		430 440 420 450	7.2 7.2 7.2 7.2	72.7 72.9 72.9 73.0
	8/23/89	10 20 30 40	960 990 1000 1005		7.2 7.2 7.2 7.2	69.8 69.8 69.2 69.4
WCC-5S	7/11/89	15 25 35 45		380 370 390 390	7.3 7.3 7.3 7.3	73.4 72.0 72.1 72.3
	8/22/89	15 25 35 45	885 900 900 900		7.2 7.3 7.3 7.3	69.1 69.1 69.2 69.4
wcc-6s	10/6/89	10 20 30 40	1,180 1,190 1,190 1,190		7.0 7.1 7.1 7.1	69.7 69.7 69.8 69.8

TABLE A-2 (continued)

Well No.	Sample Date	Sample Interval (gal)	Electrical Conductivity EC (µmhos)	Total Dissolved Solids TDS (ppm)	рн	Temperature F°
wcc-7s	7/11/89	15 25 35 45		540 520 510 510	7.2 7.1 7.2 7.2	72.5 72.5 72.7 72.5
	8/23/89	10 20 30 40	1180 1225 1220 1200		7.1 7.1 7.2 7.2	68.8 69.0 68.8 69.5
wcc-8s	7/11/89	15 25 35 45		390 390 380 380	7.3 7.2 7.2 7.2	72.5 72.7 72.5 72.7
	8/23/89	10 20 30 40	880 865 865 875		7.2 7.2 7.2 7.3	69.9 69.6 69.6 69.6
wcc-9s	10/6/89	15 25 35 45	1,110 1,070 1,050 1,000		7.1 7.2 7.2 7.2	69.1 69.2 69.0 69.1
wcc-10s	7/11/89	1 10 25 35 40 45		420 450 420 410 410 420	7.2 7.3 7.3 7.3 7.2	70.9 70.3 70.3 70.7 70.5 70.5
	8/22/89	10 20 30 40	1000 1010 1040 1040		7.2 7.2 7.3 7.3	69.1 69.1 68.9 68.8
WCC-1D	7/24/89	15 75 175 275 350	760 720 770 770 770 770		7.2 7.3 7.4 7.5 7.5	70.6 71.0 71.3 71.1 71.1
	8/21/89	20 40 60 80 100 120 135	760 756 730 730 730 720 720 720		7.4 7.4 7.5 7.5 7.4 7.4	70.1 69.6 69.7 69.2 69.7 69.8 69.8
WCC-3D	7/25/89	10 50 100 200 300 400 500	770 760 780 760 750 750 750		7.4 7.2 7.4 7.6 7.4 7.6 7.8	69.6 70.2 70.3 70.4 71.9 70.2 70.8
	8/21/89	20 40 60 80 100 120 140	710 715 715 720 720 715 715		7.3 7.4 7.4 7.4 7.4 7.4 7.4	69.5 69.2 69.3 69.0 69.3 69.8 69.1

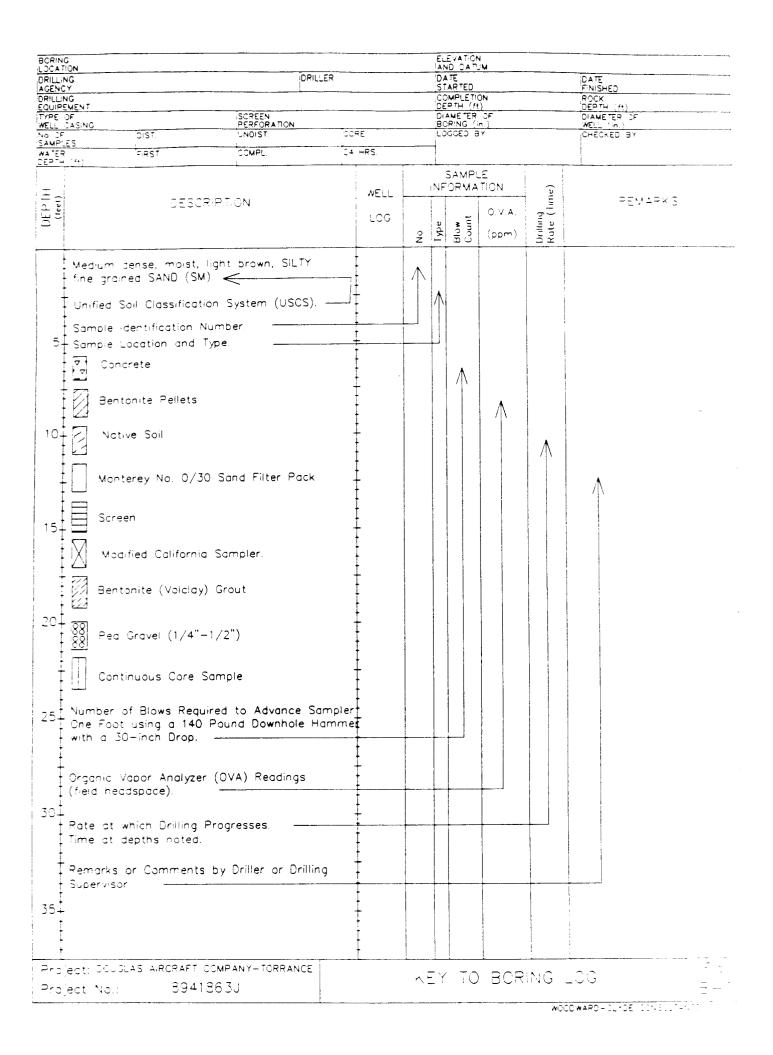
TABLE A-3
SUMMARY OF WELL CONSTRUCTION DETAILS

Deptri or Well	3
	eptn c Well (feet)
	88.5
	90.5
	83
	90.5
	91
	91
	8
	89.5
	90
	06
	140
	140

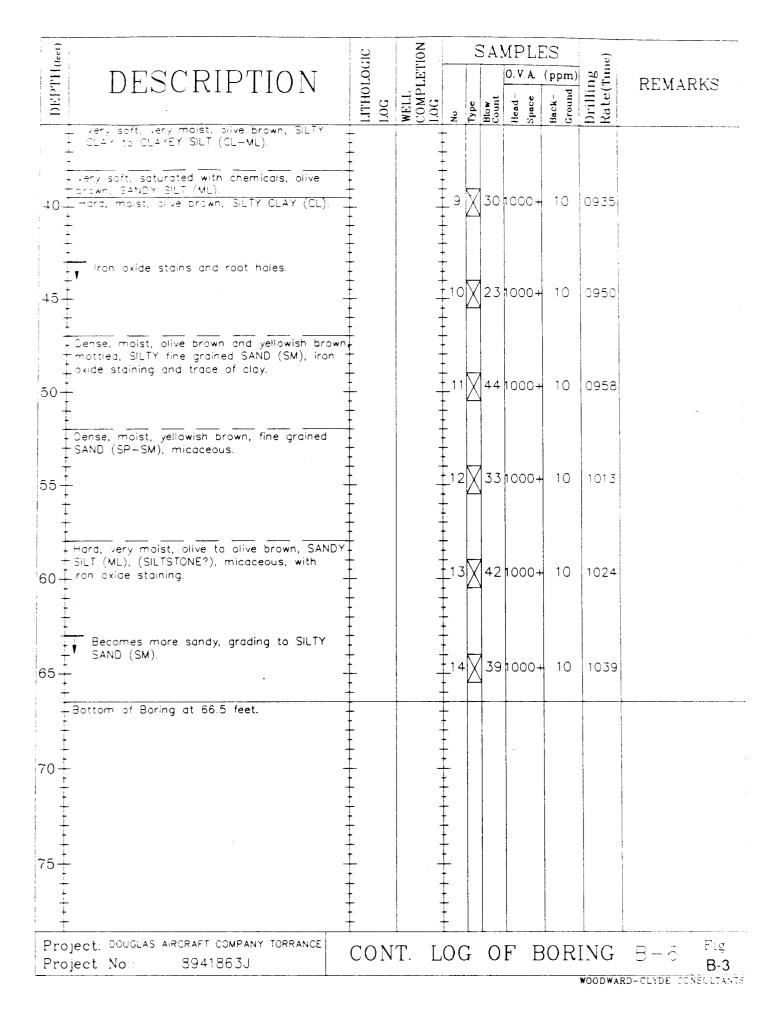
Measured from well locations plotted on site map provided by DAC.

APPENDIX B

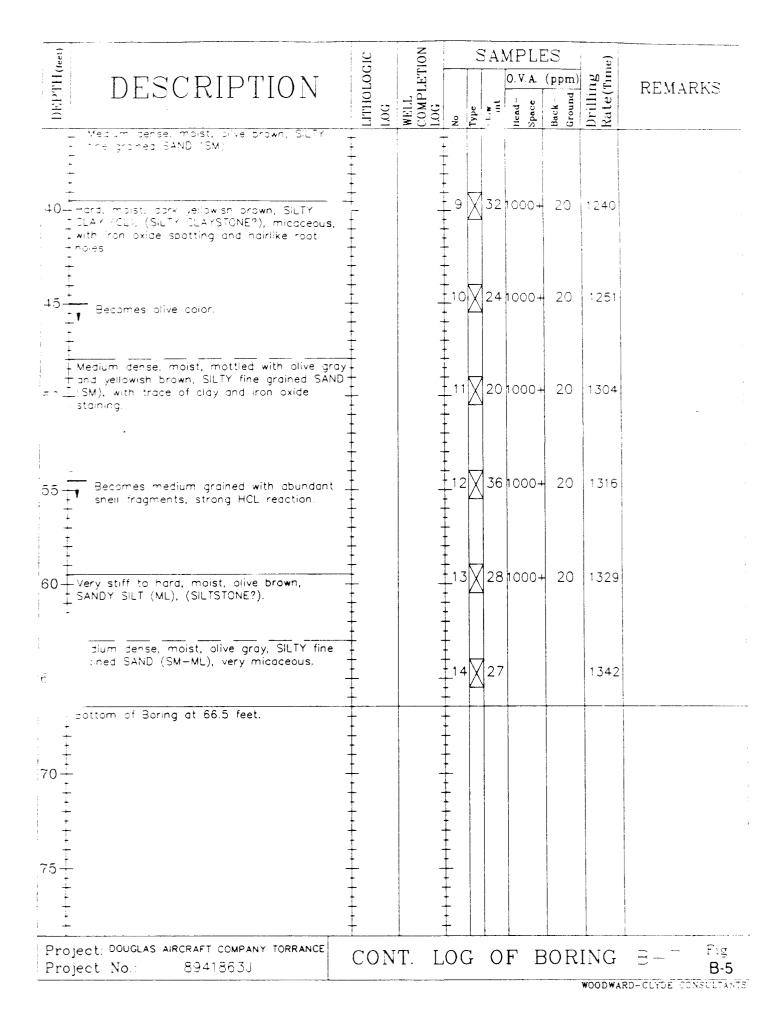
BORING LOGS



BORING See Longtion Map		ELE	VAT D <i>A</i>	ION ATUM	(App	roxima	itely 5	1 Feet above MSL
DRILLING A & R Orlling, no. DRILLER M. DRILLING OME 75 with 3 man 0.0	Romero	DAT			6-13-		DATE	HED 6-13-89
DRILLING EQUIPMENT OME 75 with 8-Inch 0.0., H.S.A. TYPE OF SCREEN		DEP DIAM	TH	(ft)	01	6.5		H (ft)
WELL CASING PERFORATION	- THICKNESS EAL(S)	BOR	<u>ING</u>	(ın	.)	3	WELL	ETER OF (IN) Sand and Bentanite
SAMPLES OF S UNDIST -1 CORE		LOG				ary miki		KED BY
WATER FIRST COMPL 24 H	RS _	†	2	. G	laesm Reves		M	1. Razmajos
	z	:	3		(PLE			
DESCRIPTION DESCRIPTION	ETION	-			0. V A.		g	
DESCRIPTION S	 1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1					- E	lling e(Tim	REMARKS
	LOG WELL COMPL	No	Туре	Blow	Head- Space	Back Ground	Drillin Rate(
finin Asphalt concrete. Tucase, moist, plive grown, fine to medium		+						:
I grained SAND to SILTY SAND (SP-SM).		† 1 †	M	7	100	10	0802	
+ very libbse, moist, blive brown, medium + grained SAND (SP).		<u> </u>		2	120	10	0815	
5 + + + + + + + + + + + + + + + + + + +		 						
† †		† †						
+ Stiff to hard, moist, dark office gray, 10 + CLAY (CH).	-	3		11	1000+	10	0819	
<u>‡</u>		<u> </u>						
+ Medium dense, moist, dark yellowish brown, + SiLTY fine grained SAND (SM), to SANDY SILT		‡						
15 T(ML). Becomes discolored to dark olive gray, with trace of clay.	-	4	Д	13	1000+	10	C824	Strong chemical
Stiff to very stiff, moist, dark yellowish brown-		<u>†</u> <u>†</u>						odor
to olive brown, SILTY CLAY (CL).		+						
20 —	-	5	\boxtimes	11	1000+	10	0900	
‡ ‡		+						
Ţ		†						
- Medium stiff to stiff, very moist, olive brown, - SANDY SILT (ML).		Ī						
25	-	<u>†</u> 6	M	7	1000+	10	0910	
-		†						
‡		[3
Loose, moist, light gray, CLAYEY fine grained		+						Encountered mixture
+ SAND (SC).		Ī 7	M	5	1 1000+	10	0917	of salical sand and bentonite powder
7 <u>‡</u>		‡					1	It is propably the
+ Very soft, very moist, olive brown, SILTY CLAY		† †						backfill material from adjacent boring.
to CLAYEY SILT (CL-ML).		<u> </u>						
35 + +	-	18	X	1	1000+	10	G925	
Project: DOUGLAS AIRCRAFT COMPANY TORRANCE	LOC			_				⊃_a Fig



BORING See Location Mad COCATION See Location Mad DRILLING A & P Driving, no. DRILLER			ELEVA	ATUM (pproxim	ately 5	1 Feet above MSL
DRILLING EQUIPMENT CME 75 with 3- nch O.D., H.S.	⁸ M. 로 A	omero	DATE STARTE COMPL	ETION	13-89	DATE FINIS ROCK	HED 6-13-89
TYPE OF SCREEN			DEPTH DIAMET BORING	(ft)	_ 66.5 	DEPT	'H (ft) — ETER OF
TYPE SIZE OF FERFORATION SAND PACK SAMPLES DIST C UNDIST 14		HICKNESS US)	Bac	kfiled ₩		wture of	(IN.) ————————————————————————————————————
WATER FIRST COMPL	CORE 24 HRS	0	LOGGE	D BY Glae		CHEC	KED BY
9	C4 AKS	_		H. Re	yes	· · ·	1. Razmajas
DESCRIPTION	JTHOLOGIC JOG	WELL COMPLETION LOG	S	AMP.		ie)	
E DESCRIPTION	0701	PLE			A. (ppm		REMARKS
	1.1.1 1.0.0	VEL.I	No. Type	Blow Count Head-	Space Back- Ground	Drilling Rate(Tim	
2 - non Asonalt concrete		3 U II	Z	<u> </u>	୬ ≘ ଅ	2 2	
Tivery is ff. moist, dark yellowish brown to — dark gray, CLAY (CH).	- - -		1	15 6	0 20	1142	
Becomes motified with iron oxide stains and black stains of decomposed roots.	<u> </u>	+	-				
5 +	_	1	2	23 80	20	1149	
mard, moist, dark yellowish brown, SILTY	-	1	.				
+ SLAY (SL).	-	+	-				
1		<u> </u>					.
10	-	+	_ 3 🕅 .	32 90	20	1155	
-		‡					
. ‡		+					
<u>, †</u>		Ŧ					
15 + dara, maist, dark yellowish brown, SANDY		‡	4	39 90	20	1202	
± SLT (ME)		+					
-		Ī					
<u></u>		+	_				
50 +		+	5 🛛 2	24 110	20	1209	
÷		İ					:
‡		+					
25		‡		7 100			
+		+	6 1	7 120	20	1215	
‡		Ī					
‡		‡					
0 +		Ŧ	7 M 2	71000	1 20	1224	
Medium dense, moist, olive brown, SILTY fine grained SAND (SM).		ŧ		71000	+ 20		Strong chemical odor
‡		Ŧ					
‡		Ŧ					
5 🛨		Ŧ	3 M ₂	4 1000	+ 20	1231	
Project: DOUGLAS AIRCRAFT COMPANY TORRANCE			Δ-		20	1231	
Project No.: 8941863J	I	LOG	OF	BOI	RING		B-7 Fig
							B-4 D-CLYDE CONSULTANTS

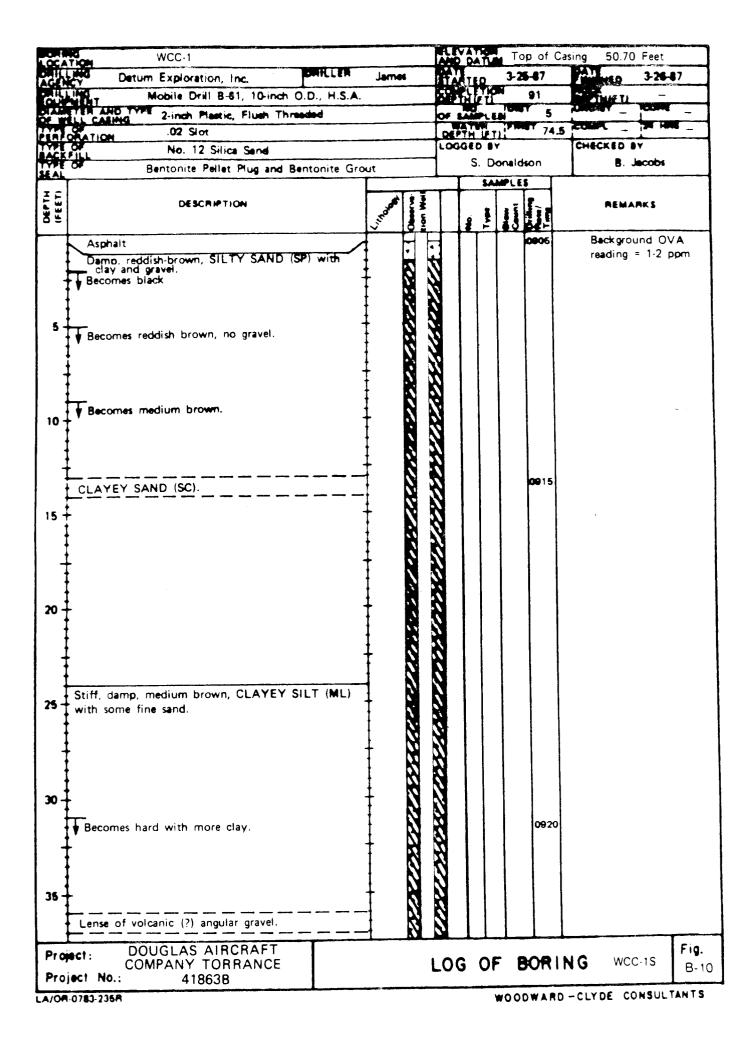


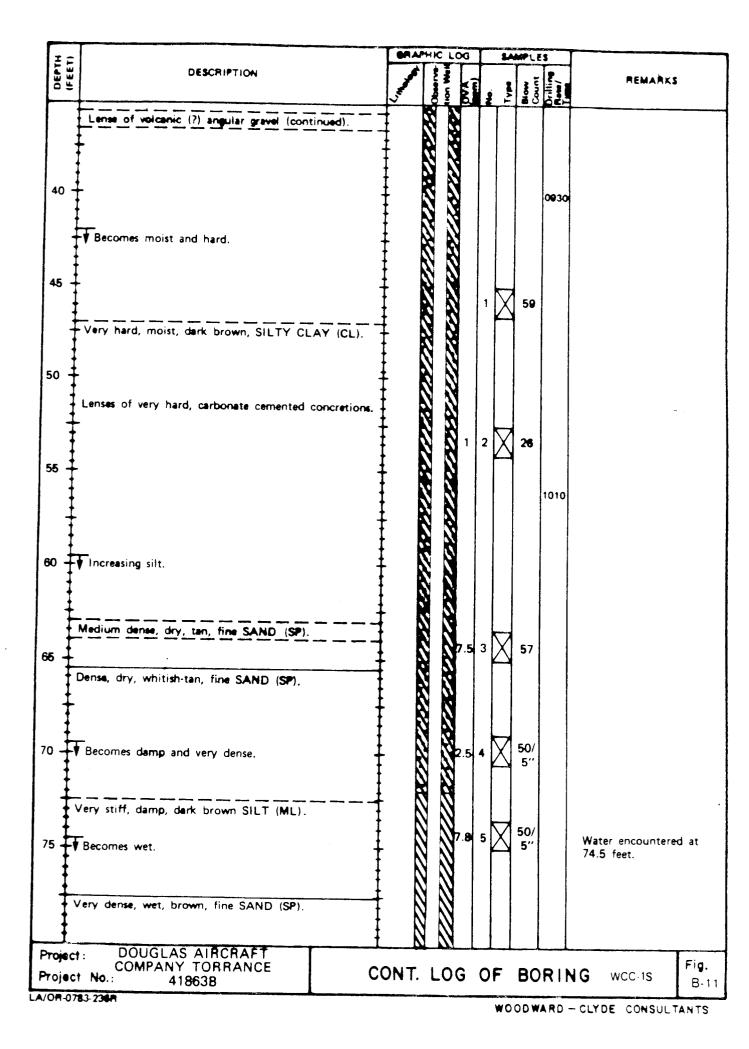
BORING See Location Map		ELEVAT	TON ATUM	Appr	oxima	tely 51	Feet above MSL
DRILLING A & R Drilling, Inc. DRILLER M. R	omero	DATE STARTE		5-14-	-89	DATE FINISH	HED 6-14-89
DRILLING EQUIPMENT CME 75 with 8-inch O.D., H.S.A. TYPE OF SCREEN		DEPTH	(ft)	Ö	6.5	ROCK DEPTH	- (ft)
WELL CASING PERFORATION	HICKNESS	DIAMET	(in)	8	WELL	
No OF DIST C UNDIST CORE	HICKNESS (L(S)	LOGGE			ry Mixt		Sand and Bentonite KED BY
WATER FIRST COMPL 24 HRS		!	. Gl	aesm	-		. Razmajos
DEPTH (ft) =	Z			Reye: PLE			
DESCRIPTION DESCRIPTION	WELL. COMPLETION LOG					me)	
E DESCRIPTION &	L PLE			O. V A.	(ppitt)	lin _E	REMARKS
2 D D D D D D D D D D D D D D D D D D D	VEIL VOM	No. Type	Blow Count	Head- Space	Back- Ground mdd	ril gate	
+ 5-nin Asphalt concrete over 6-inch base	1	+ -	Ξ0	π α	ш О		
material. - very stiff, moist, very dark brown, SANDY		Ī 1 🛛	16	18	12	0745	
# CLAY (CL), with root holes.							
: +	-	‡			_		
5——————————————————————————————————————	-	<u> </u>	43	47	12	07581	
Dense, moist, yellowish brown, CLAYEY fine + grained SAND (SC).	-	+					
Hard, moist, dark brown, SiLTY CLAY (CL),		Ξl					-
with root holes.		Į L					
10 +	-	‡3 X	58	42	12	0806	
† ‡	-						
+ Medium stiff, moist, olive brown, SANDY		Ŧ					
+ SILT (ML).		+					
15		£ 4 🛛	11	45	12	0815	
15-		ΞP					
		‡					
+ very st.ff, moist, dark brown, SILTY CLAY (CL) with hairlike root holes.		$\frac{1}{2}$					
1		+ 5 🛚	21	20	12	0820	
20 +	-	†" <u>^</u>	- '	20	12	0020	
Very stiff, moist, dark brown, SILTY		Ξl					
T CLAY (CL) with nairlike root hales.		<u> </u>					
i		‡	1				
25 + +	-	<u> </u>	15	42	12	0826	
very stiff to hard, moist, dark olive brown,		Ŧ [
SILTY CLAY (CL), with calcareous nodules and hairlike root holes.		+					
† 1 d Halling Foot Holes.		ŧ L					
30 ‡		Į 7 🛚	26	58	12	0833	
j		‡	4				
+ Very dense, moist, dark olive brown, SILTY		‡					
† fine grained SAND (SM), with large calcareous		+					
i Incodules		± a 🛚	86	68	12	0841	
35 + +	1	+ ~ \			1 -	1	
Project: DOUGLAS AIRCRAFT COMPANY TORRANCE	LOC	G 01	7	BOF	RINC	, J	B-3: Fig
Project No.: 8941863J				- 			B-6 ARD-CLYDE CONSULTANTS

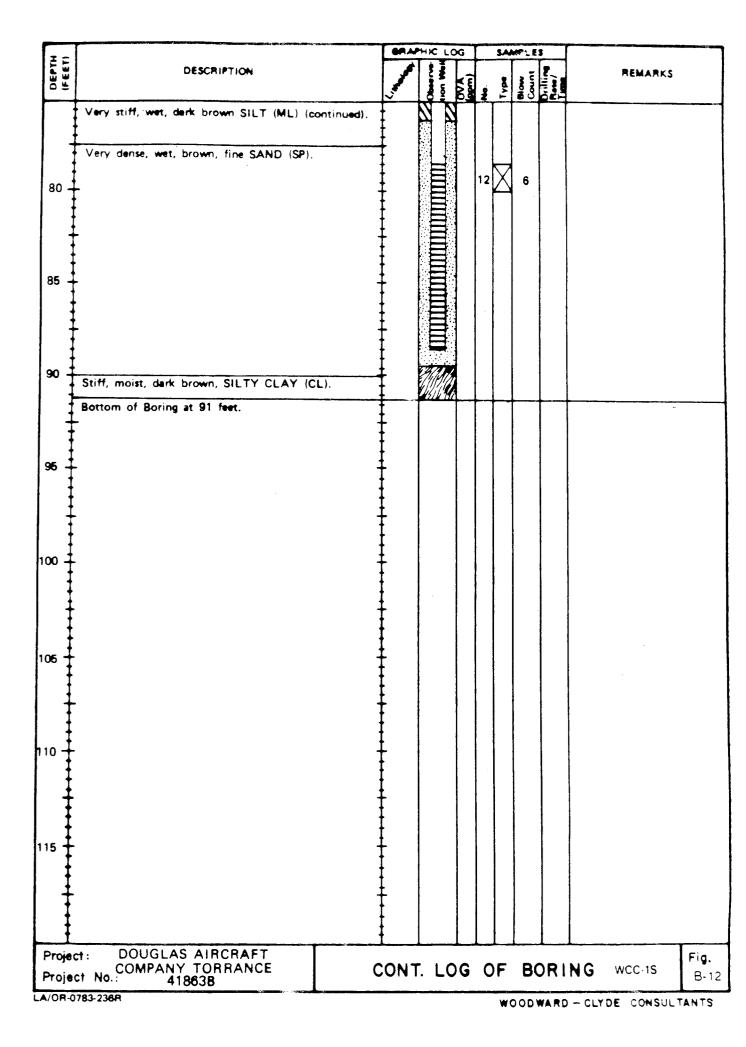
eet)		2]	NOI		S	AN	лРL	ES	,	(ie)	; ;
DEPTH(feet)	DESCRIPTION	LITHOLOGIC OG	PLETION				O. V. A.	q).	ق (md	Drilling Rate(Time)	REMARKS
DEI		LITH	WELL COMPI LOG	N. O.	Type	Blow Count	Head- Space	Back	Groun	Dril	:
-	ver, dense, moist, dark blive brown, SiLTY fine grained SAND (SM), with large calcareous nodules.	+		+							
	3 Lens of hard, moist, dark olive brown, silty clay.	‡				7.0				00.10	
40-	Silty sand becomes very maist, alive in color.	 	-	9	Ă	29	125		12	0848	
	Very stiff to hard, moist, olive, SANDY CLAY (CL), with iron oxide stains and calcareous	+		<u> </u>							
45-	nodules. (Strong HCL Reaction)	+	-	10	X	29	230		12	0857	
	Medium dense, moist, olive gray and yellowist brown mottled, SILTY fine grained SAND (SM) (SP), with iron oxide staining, micaceous.	+ +		 							
50-	-	+	-	<u>+</u> 11	X	24	1000)+	12	0912	
-	- - - -	+		+							-
55-	Becomes dense, medium grained with abundant iron oxide, calcareous nodules, and shell fragments cemented.	+ + + + + + + + + + + + + + + + + + +	-	<u> </u>	X	35	1000)+	12	0925	
-	Very dense, moist, yellowish brown, medium grained SAND (SP).	+		+++++++++++++++++++++++++++++++++++++++							
60-		+		13	X	85	1000	D+	12	0934	
	Hard, moist, olive, SANDY SILT (ML), (SILTSTONE?), micaceous.	+		+++++++++++++++++++++++++++++++++++++++							
	Dense, moist, yellowish brown, medium graine SAND (SP). Dense, moist, olive, SILTY fine grained SAND (SM).	:d + + +		‡ <u>†</u> 14 †	X	35	1000) +C	12	0952	
-	Bottom of Boring at 66.5 feet.	† †		 							
-	- - - -	+		+							
70-		+		+							
-		†		‡							
75-	- - -	+		+							
-	• - -	‡		‡							
-		‡		<u> </u>		_					
	oject: Douglas aircraft company torrance oject No.: 8941863J	CON	IT. I		<u>J</u>	0	F	BO)R		B-3 Fig B-7

BORING LOCATION		See Loc	ation Map				ELEV.	TION DATUM	App	roxima	ately 5	1 Feet abov	ve MSL
DRILLING AGENCY		iling, Inc	· · · · · · · · · · · · · · · · · · ·		М. Rc	mero	DATE	TED (5-14-	-89	DATE FINISH	HED ნ−:4	83
DRILLING EQUIPMENT TYPE OF	CME 75	with 8-	-inch O.D SCREEN	., ≒.S.	Α.		DEPTI	LETION H (ft) TER (6	6.5	ROCK	H (ft) -	
WELL CASING TYPE SIZE OF SAND PACK	<u> </u>		PERFORATIO	N	TYPE/TH OF SEAL	IICKNESS	BORIN	iG (ın.)	8	WELL	(IN) Sand and Ber	
No OF SAMPLES	DIST	0	UNDIST	14	OF SEAL	(S) ()		ED BY		ary mixt		KED BY	tonite
WATER DEPTH (ft)	FIRST		COMPL		24 HRS				laesm Reye:		M	. Rozmaj	oc
					ن	N.	5		PLE				
	DEC	CDII	ттол	T	150.	ETIC		T		(ppm)	g	DEMA	
)EPTH(feet)	DES	CRIF	OITC	V	JUNOFOCIC	WELL COMPLETION LOG		ı,			Drilling Rate(Time)	REMAI	KNS
					LITI	Z O X E	ON F	Blow	Head- Space	Back Ground	7 Z		
· — <u>mate</u>	rial.		over 9-incr		 		+	1					
# Mediun ! CLAY	n stiff, sat (CL).	urated, do	ark brown, S	SILTY .	<u> </u>	-	<u> </u>	6	100	19	1107		
i <u>t</u>	omes very	akiff		-	+	-	+						
5 +	ornes very	5(11).		_	_	-	£ 2 \	21	100	19	1112		
† †					<u> </u>	-	+ K	7					
† †				-	<u> </u>	-			,				~
+				-	+	-	+						
10 + Bec	omes nard			_	İ	_	13	47	100	20	1120		
10					<u> </u>		<u> </u>	7					
+				-	†	-	†						
Bec	omes more	e silty, ver	y stiff.	-	Ī	-							
+'				-	+	-	4	26	100	20	1124		
15 +						-	I K	7					
	i dense, m : SAND (SM		brown, SIL	TY fine -	+	_	+						
‡		•		-	Ī	-	1						4
20 +				-	+	-	5	730	100	20	1130		
<u> </u>				_	Ī	-	F K	7					
	very stiff. IL), micace		live brown,	SANDY	-			ì					
+	,			-	+	-	†						
-				-	<u> </u>	-	F 6	16	130	20	1137		
25 +				-	+	-	t ~ k	7,0	130	20	' ' '		1
			brown, SIL		<u> </u>					ļ			
+ (50), *	TOT OX	ade spotti	ng ana 100	t Hores.	+		+					: •	
*				-	<u> </u>		‡ _ k	7,5		20	11.45		
30 🕂				-	+	-	† / K	25	130	20	1145		
+					‡	-	†						
			brown, SIL	TY fine	<u> </u>		[
- gramed	SAND (SM	۱).		-	+		+ -		_				
35 🕂				_	<u></u>	-	8	21	125	20	1153	!	
Project: [©]				NCE		LOG		ਜ ਜ	ROF	INC	<u>.</u>	B-9	Fig
Project :	No.:	894186	3J					Τ .				RD-CLYDE CO	B-8

eet)		21	N O		S	SA	мРL	ES	(a)	
TH(DESCRIPTION	TOC	LETI				0. V. A	(ppm)	ng Time	REMARKS
DEPTH(feet)	DECIVII TION	LITHOLOGIC LOG	WELL COMPLETION LOG	No.	ype	low ount	Head-	Back- Ground	Drilling Rate(Time)	
-	Medium dense, moist, blive prown, SiLTY		201	- Z -	T	m ပ	Ξ 2	<u> </u>		
		 -	-	+						
10	- Hard, moist, dark plive brown, SILTY CLAY	‡ +	-	† † 9		68	120	20	1202	·
+0-	T(CL), micaceous.	+		+ 1	\cap					
	· - ·	Ī	-	-						
	Becomes very stiff, olive, with iron oxide spotting and decomposed roots.		-	† † 10		25	130		1011	
45-	- - -	<u></u>	-	<u> </u> 'U	Å	23	130	20	1211	
	Dense, moist, mottled, olive gray and yellowism	 -	-	+						
-	(SW-SP), with iron oxide staining.	 		‡						
50	_	+	-	† 11 †	X	45	340	20	1224	_
	Becomes less silty, grades to dense, moisi	+		‡						Moderate Chemical
	yellowish brown, fine to medium grained SAND (SP), micaceous.	+	-	+				ļ		odor.
55	- -	-	-	<u>F</u> 12		42	900	20	1235	
				+				-		
		<u> </u>		<u> </u>						
60	- - -	_	-	+ + 13		46	490	20	1250	
	Dense, damp to maist, alive gray, SILTY fine	<u> </u>		‡						
	grained SAND (SM), very micaceous.	<u>+</u>		+						
	Hard, moist, olive, SANDY SILT (ML), (SILTSTONE?), micaceous.	‡		‡ †14		30	1000)+ 20	1303	
65-	<u>.</u> `	 	-	 						
	-Bottom of Boring at 66.5 feet.	+		+						
	-			+						
70	_	+	-	<u> </u>						
+	•	Ŧ		Ī						
	_	+		+						
75	- -	<u>†</u>	-	+						
		<u></u>		<u>+</u>						
		<u> </u>		+						
1	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE	CON	T. L	.O(J	0	F	BOR	ING	8-9 Fig
Pro	eject No.: 8941863J									B-9 ARD-CLYDE CONSULTANT







A & R Drilling, Inc.	ORIN	WCC-2 See Figure	e 2			ELE	VATION D DATU	u To	op of	casing @ 50.59 ft.
CME 75, 10 - inch H.S.A. CASING 4* Sch. 40 PVC PRINTENTON DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION Asproit Medium stiff, very moist, dork yellowish brown. SANDY CLAY (CL). Becomes very dark grayish brown. SANDY CLAY (CL). Continued SAND	RILLI			Smi	th					
DESCRIPTION REMARKS DAMPL REMARKS 1306 Beackground OVA reading = 5 ppm 1317 Toortinued SANDY CLAY (CL). Redulm stiff, very maist, alive brown, SLTY CLAY. DESCRIPTION DESCRIPTION REMARKS 1306 1317 1317 1317 1317 1319 1327 DESCRIPTION DESCRIPTION REMARKS DESCRIPTION 1319 1327 1327 DESCRIPTION DESCRIPTION REMARKS DESCRIPTION REMARKS DAMPL REMARKS DAM	RILLE	G CNE 75 10 : 11	S.A.			CO	MPLETIC	N S	0.6	ROOK
DESCRIPTION Aspinalt Aspinalt Medium stiff, very moist, dork yellowish brown, SANDY CLAY (CL). Becomes very dark grayish brown. Color change to yellowish brown. Becomes stiffer less moisture, SANDY CLAY (CL). Continued SANDY CLAY (CL). Continued SANDY CLAY (CL). Aspinalt Continued SANDY CLAY (CL). Continued SANDY CLAY (CL). Aspinalt Continued SANDY CLAY (CL).				Slot		DIA	METER	OF		DIAMETER OF 4
DESCRIPTION Aspinalt Methodium stiff, very moist, dark yellowish brown, and stiffer less moisture, SANDY CLAY (CL). Continued SANDY CLAY (CL). Aspinalt Continued SANDY CLAY (CL). Aspinalt Continued SANDY CLAY (CL). Aspinalt Continued SANDY CLAY (CL). Medium stiff, very moist, olive brown, SILTY CLAY. CLAY	lo OF	DIST UNDIST. 5		3,00		LO	SCED BY	•/		CHECKED BY
DESCRIPTION WELL NPORMATION DESCRIPTION WELL NPORMATION DESCRIPTION Asphalt Medium stiff, very moist, dark yellowish brown. Becomes very dark grayish brown. Becomes very dark grayish brown. Description Color change to yellowish brown. Becomes stiffer less moisture, SANDY CLAY (CL). To Continued SANDY CLAY (CL). Less stiff, more moist. Continued SANDY CLAY (CL). Less stiff, more moist. To Grades to SILTY CLAY (CL). Less stiff, more moist. 1317 To Grades to SILTY CLAY (CL). Less stiff, more moist. 1327 1327 1327 1327 Description DUGLAS AIRCRAFT COMPANY LOG OF BORING WCC-2S Figures in the content of the cont	AMPL ATER CPTH	(ft) FIRST 73 COMPL _	24 HR	s. 71	.1	1		l. Rey	es	B. Jacobs
Asphalt Maddum stiff, very moist, dark yellowish brown, SANDY CLAY (CL). Becomes very dark grayish brown. Color change to yellowish brown. Becomes stiffer less moisture, SANDY CLAY (CL). Continued SANDY CLAY (CL). Continued SANDY CLAY (CL). Medium stiff, very moist, olive brown, SLTY CLAY CLA			V	MELL				ПОИ	Ime)	REMARKS
Medium stiff, very maist, dark yellowish brown. SANDY CLAY (CL). Color change to yellowish brown. Becomes stiffer less maisture. SANDY CLAY (CL). Continued SANDY CLAY (CL). Medium stiff, very maist, olive brown, SLTY CLAY. 1319 1327 1327 1327 1327 1327 1327	5 -	Asphait		LOG	ó	Туре	Blow			
stiffer less moisture, SANDY CLAY (CL). Continued SANDY CLAY (CL). Less stiff, more moist. Grades to SILTY CLAY (CL). Medium stiff, very moist, alive brown, SILTY CLAY. Solution of the continued SANDY CLAY (CL). Medium stiff, very moist, alive brown, SILTY CLAY. LOG OF BORING WCC-2S Figure 1.1.	5	Medium stiff, very moist, dark yellowish b SANDY CLAY (CL).	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2 4 2 4 2 4						Background OVA reading = 5 ppm
Continued SANDY CLAY (CL). Less stiff, more moist. 1319 Grades to SILTY CLAY (CL). Medium stiff, very moist, olive brown, SILTY CLAY. 1323 1327 1327 LOG OF BORING WCC-2S Figure 1 (CL) and the state of the s	+	Color change to yellowish brown. Beco stiffer less moisture, SANDY CLAY (Cl	omes						1717	•
Grades to SILTY CLAY (CL). Medium stiff, very moist, olive brown, SILTY CLAY. 1323 1327 1327 LOG OF BORING WCC-28		Continued SANDY CLAY (CL). Less stirmore moist.	#, \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\							
1323 1327 1327 1333 Project: DOUGLAS AIRCRAFT COMPANY LOG OF BORING WCC-2S Balance No.		Medium stiff, very moist, olive brown, SIL	 IY						1319	
1327 1333 Project: DOUGLAS AIRCRAFT COMPANY LOG OF BORING WCC-2S Barriers No. 1	15								1323	
Project: DOUGLAS AIRCRAFT COMPANY LOG OF BORING WCC-2S	io								1327	
Project No.	+	20101-0-1000							1333	
leavant Na:	-	.			10)G	OF	BOR	ING	WCC-2S Fig.
10,000 100 8741863D I	roj	ect No.: 8741863D				,) i			B-13

and the second section with the second section of

Continued) Stiff, moist, alive brown, SILTY CLAY (CL). Sense, moist, alive brown, fine grained, SILTY SAND (SM), with shells. 1	DEPTH (feet)	DESCRIPTION	WELL LOG	ó	Type	Blow	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS	
SILTY SAND (SM), with shells.	40-	(continued) - Stiff, moist, olive brown, SILTY CLAY (CL).								
Very dense, damp, strong brown, fine grained SAND (SP) to SILTY SAND (SM), iron oxide staining. Becomes SILTY SAND. Dense, malst, allve, fine grained SILTY SAND (SM), some iron oxide stains. 3	45	Dense, moist, olive brown, fine grained, SILTY SAND (SM), with shells.		1	X	34	5	1342		
Very dense, damp, strong brown, fine grained SAND (SP) to SILTY SAND (SM), iron oxide staining. Becomes SILTY SAND. Becomes SILTY SAND. 55 Dense, molst, olive, fine grained SILTY SAND (SM), some iron oxide stains. 70 Becomes wet. 75 Very dense, wet, olive brown, fine grained, SILTY SAND (SM).	50							1357		
Becomes SILTY SAND. 5 Dense, moist, olive, fine grained SILTY SAND (SM), some iron oxide stains. 5 Very dense, wet, olive brown, fine grained, SILTY SAND (SM). 80 Language DOLIGIAS AIRCRAFT COMPANY	55	grained SAND (SP) to SILTY SAND (SM),		2	X	60	5	1402		-
Dense, malst, alive, fine grained SILTY SAND (SM), some iron oxide stains. 70 Becomes wet. 75 Very dense, wet, alive brown, fine grained, SILTY SAND (SM). 80 Reviect DOUGLAS, ARCRAFT COMPANY	60	iron oxide staining.						1423		
Becomes wet. 75 Very dense, wet, olive brown, fine grained, SILTY SAND (SM). 80 1500 Water at 73 feet 1512	65	Dense, malst, olive, fine grained SILTY SAND		3	X	42	6	1433		
Very dense, wet, olive brown, fine grained, SILTY SAND (SM). 80 1512 80 Residet DOUGLAS AIRCRAFT COMPANY	70							1500	Water at 7	7 feet
Braingt DOLIGLAS AIRCRAFT COMPANY	75	Very dense, wet, olive brown, fine grained,		4	X	68	6	1512	_ water at /	
Project: DOUGLAS AIRCRAFT COMPANY CONTILOG OF BODING WCC 28 Fig	-							1544		
Project No.: 8741863D CONT. LOG OF BORING WCC-2S B-1		ant No.	CONT.	L(OG	OF	BOR	ING	WCC-2S	Fig. B-14

DEPTH (feet)	DESCRIPTION	WELL LOG	ó	Type	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, wet, olive, fine grained to very fine grained SILTY SAND (SM), micaceous, with some clay interbedding and iron oxide staining.		5	X	50/ 3"	5	1600	
90								
95	Bottom of Boring at 90.5 feet.	† † † † †						Note: 48 gallans of city water used to offset hydro static head of flowing sands during well installation.
100		+						-
05		+						
110		T						
115		† † † †						
20		+						
25								
	ject: DOUGLAS AIRCRAFT COMPANY	CONT	. L	J OG	OF	BOF	RING	WCC-2S Fig. B-15
Pro.	ject No.: 8741863D							DODWARD-CLYDE CONSULTANTS

BORIN LOCA	WCC-3 See Figure 2			ELE	VATION DATUS	, To	p of	Casing © 51.19 ft.
ORILLI AGEN	NG A & P. Drilling Inc. DRILLER	M. Smit	:h	BAT	E RTED	10-2		DATE 10-26-87
DRILLI				DEP	PLETION TH. (PL)		92	ROCK — DEPTH (ft) —
TYPE	OF Sch. 40 PVC SCREEN .01	0 Slot		DIAN	METER (OF S	10	DIAMETER OF 4 WELL (In.)
NO OF	E UNDIST. 6 00				CED 8Y		20	B. Jacobs
WATE!	PRST 77 E COMPL. 124	HRS. 74	.0			. Ney		B. Jacobs
DEPTH ((eet)	DESCRIPTION	WE LL		NFC	TAMPLE Cornit		Drilling Rate (Time)	REMARKS
10-	Asphalt Damp, very dark grayish brown, fine grained SILTY SAND (SM) with small gravel. Soft, very moist, dark gray to black SILTY CLAY (CL). Becomes less moist, dark yellowish brown, stiff. Continued SILTY CLAY (CL). Becomes more stiff, no detectable ador.						0846	Background OVA reading = 4-6 ppm
20-	Dense, moist, yellowish brown, CLAYEY SAND to SANDY CLAY (SC-CL). Grades to SILTY CLAY (CL). Stiff, moist, dark yellowish brown SILTY CLAY.						0857	No odor.
30- 35-	Lens of volcanic ash.						0913	No odor.
Pro	ject: DOUGLAS AIRCRAFT COMPANY		1 0	<u></u> -	٥٤	BOR	INC	WCC-3S Fig.
	ject No.: 8741863D		L	ى ر	Ur	BUK	ING	WCC-33 B-16
	0/410000						WO	ODWARD-CLYDE CONSULTANTS

OF P. H.	DESCRIPTION	WELL LOG	No.	1ype	Blow	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	. (continued) - Stiff, moist, olive brown, SILTY CLAY (CL).						0921	
45	Lens of stiff, moist, alive, SANDY SILT (ML), micaceaus with decomposed pieces of roots.		1	X	25	30	0924	Earthy odor.
50	Clay becomes more stiff, interbedded with						0937	
55	lenses of dense, moist, yellowish brown, medium grained SILTY SAND (SM) with shells, partially cemented and crystalized calcite.		2	X	30	570	0945	Moderate chemical odor.
60	- -						1005	
65-	Dense, moist, yellowish brown to olive gray, very fine grained SILTY SAND to SAND (SM-SP), micaceous.		3	X	46	440	1015	Easier drilling. Moderate to strong chemical odor.
70-	Very stiff, very moist, olive brown, SANDY SILT (ML), micaceous with iron oxide stains.		4	X	35	+100	1035	Very easy drilling. Strong chemical odor.
75-	Becomes wet. Very dense, wet, olive brown fine grained SANI (SP) to SILTY SAND (SM).		5	2	59	+100	00 104	▼ Water at 73.5 feet. 7 Strong chemical odor.
80-	Decomes medium gramed.		6	>	N.F	r. +100	00 111:	
	ject: DOUGLAS AIRCRAFT COMPANY	CONT	. L	00	3 01	BOI	RING	WCC-3S Fig.
Pro	ject No.: 8741863D							DODWARD-CLYDE CONSULTANTS

DEPTH (feet)	DESCRIPTION	WELL.	ó	Type	Blow	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, saturated, olive brown, fine to medium grained SAND (SP-SM) with some silt.						1205	Moderate to strong chemical odor.
90							1545	
95	Battam of Boring at 92.0 feet.	+ + + + + + + + + + + + + + + + + + + +						Note: Used 59 gallons of city water to offset hydrostatic head of flowing sands during well installation.
100		+++++++++++++++++++++++++++++++++++++++						
105		+ + + + + + + + + + + + + + + + + + + +						
110		+						
115		+++++++++++++++++++++++++++++++++++++++						
120		+ + + + + + + + + + + + + + + + + + + +						
125								
	ect: DOUGLAS AIRCRAFT COMPANY ect No.: 8741863D	CONT	. L(OG	OF	BOR		WCC-3S Fig. B-18 COWARD-CLYDE CONSULTANTS

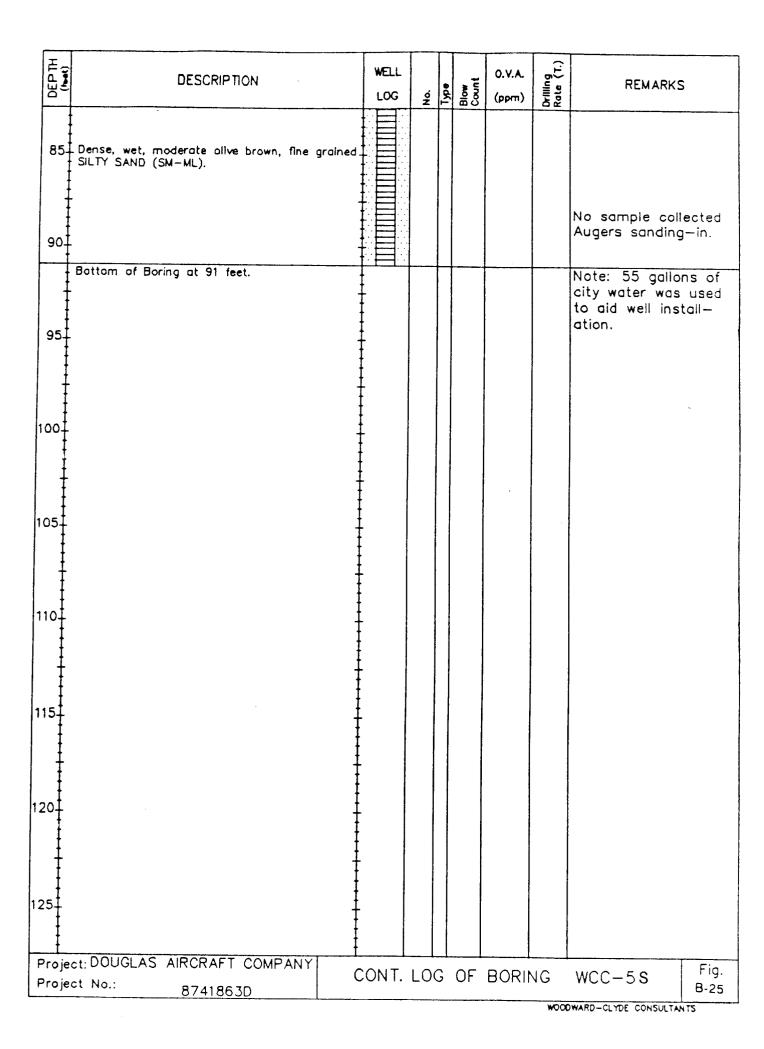
BORING LOCATION DRILLING			WCC			Figur		и с-	ı (+h		VATION D DATU TE	To 10-2		casing @ 49.69 ft.
AGENCY DRILLING	_ <u>A</u>	& R		lling,				M. Sm	III		MPLETIO	N C	7-87 91.5	PATE FINSHED 10-27-87 ROOK POPTH (ft)
EQUIPEMENT	4"	C - l-				nch H		0 61-4		DE	PTH (ft)	3	10	DEPTH (ft) DIAMETER OF 4
	4	Sch.	40	PVC	SCREEN PERFORA UNDIST.	NOITA 8		O Slot		B0	METER RING (in	<u>, j</u>	10	DIAMETER OF 4 WELL (in.) CHECKED BY
No OF SAMPLES WATER DEPTH (ft)		FIRST		- 75	COMPL		1		<u>-</u> '1.6	-	H	l. Rey	es	B. Jacobs
DEPTH (ft)				<u>, , , , , , , , , , , , , , , , , , , </u>			L		ΪŤ		SAMPL	 F		
DEPTH (feet)			DES	CRIPT	ION			WELL			ORMAT		Drilling Rate (Time)	REMARKS
Asphal								LOG	Ž	Type	Blow	(ppm)	Pate Rate	
Moist, SAND	gra (CL)					with sc		70	200000000000000000000000000000000000000					Background OVA reading = 4-6 ppm No odor.
25								1111111						
35 }	Len	se of	dark	green	ish bla	ck volc	anic(?'							
1	ang	ular g	ravel	١										
Project: DO Project: No		SLAS				MPANY		<u> </u>	<u>ra</u> l	-00	OF	BOF	RING	WCC-4S Fig. B-1
				37418	<u>00</u>								w	DODWARD-CLYDE CONSULTANTS

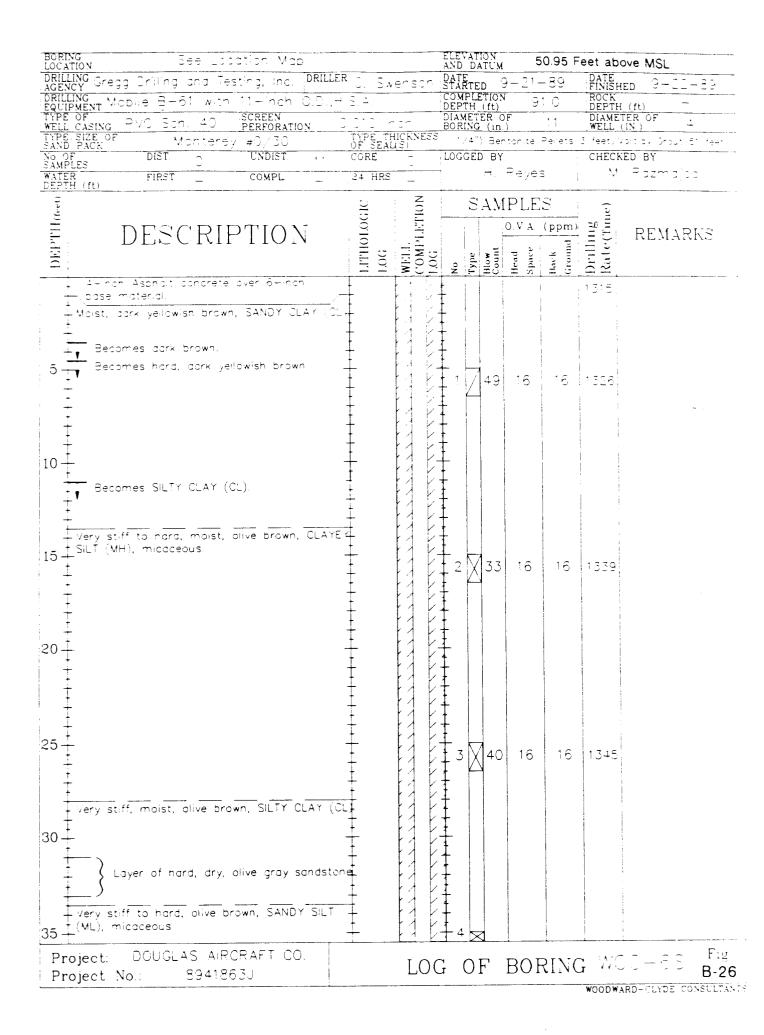
DEPTH (feet)	DESCRIPTION	WELL LOG	No.	-dk	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS	
40									
45	. Very stiff, organic roots and plant detritus with orangish iron oxide staining.		1	X	18	8	1345	No odor.	
50									
55			2	X	23	8	1350	No odor.	
60	. Occasional fossiliferous gravel.								
65	Hard, light alive brown, fine SANDY SILT to SILTY fine SAND (SM).		3	X	43	5	1425	No odor.	
70-	-								
75-	Becomes wet. Hard, damp, light olive brown, SILTY CLAY (CL) with iron oxide staining.		4	2	42	7		∑ Water at 75 feet.	
	Very dense, light olive brown, fine grained SAND (SP) with little silt.		5	2	45	8	153	0 No odor.	
1	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 8741863D	CONT	. L	00	G 01	BOF		WCC-4S Fig B-2	

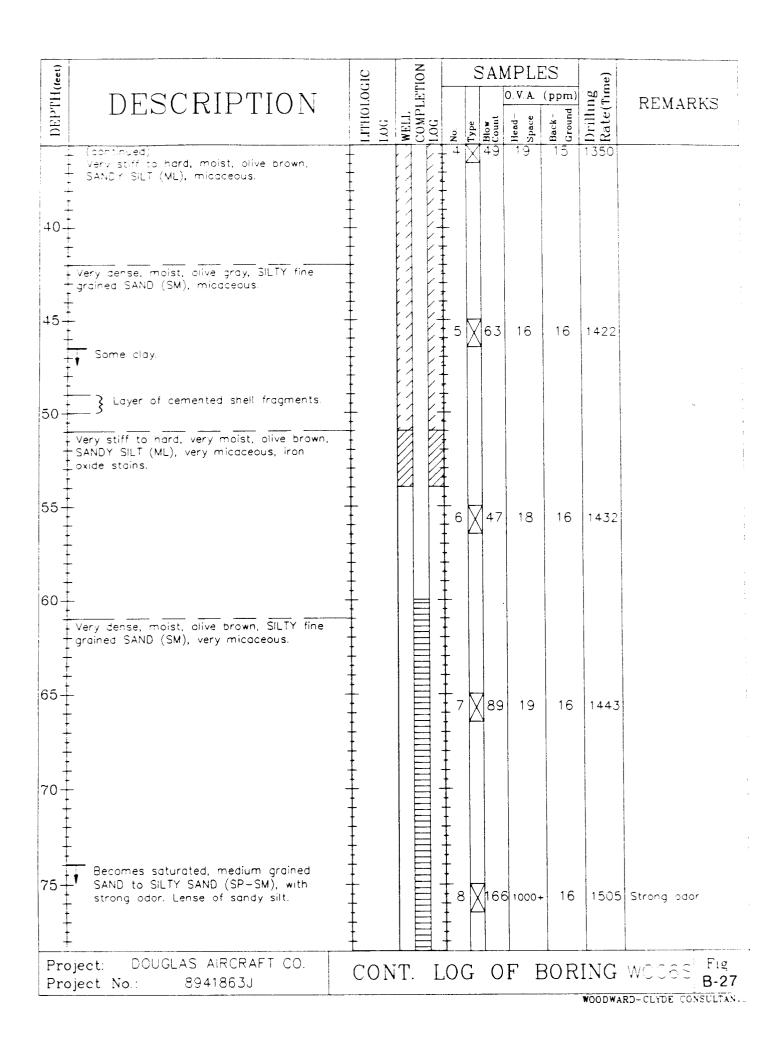
DEPTH (feet)	DESCRIPTION	WELL	ó	Туре	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85-	(continued) Very dense, wet, light olive brown, fine grained SAND (SP) with little silt.							
90-	Moist, light olive brown, SILTY CLAY (ML-CL).		6	X	N.R.	8	1700	No odor. Note: 45 gallons of city
95-	Battam of Boring at 91.5 feet.	+ + + + + + + + + + + + + + + + + + +						water used to offset hydro- static head of flowing sands during well instal- lation.
100-		† † † † †						
105-		† † †						
110		+++++++++++++++++++++++++++++++++++++++						
115-	·	† † † † † †						
120-		+ + + + + + + + + + + + + + + + + + + +						
125		+						5:-
	pject: DOUGLAS AIRCRAFT COMPANY	CON	Г. L	.0	G O	F BO	RING	WCC-4S Fig. B-21
Pro	pject No.: 8741863D							OODWARD-CLYDE CONSULTANTS

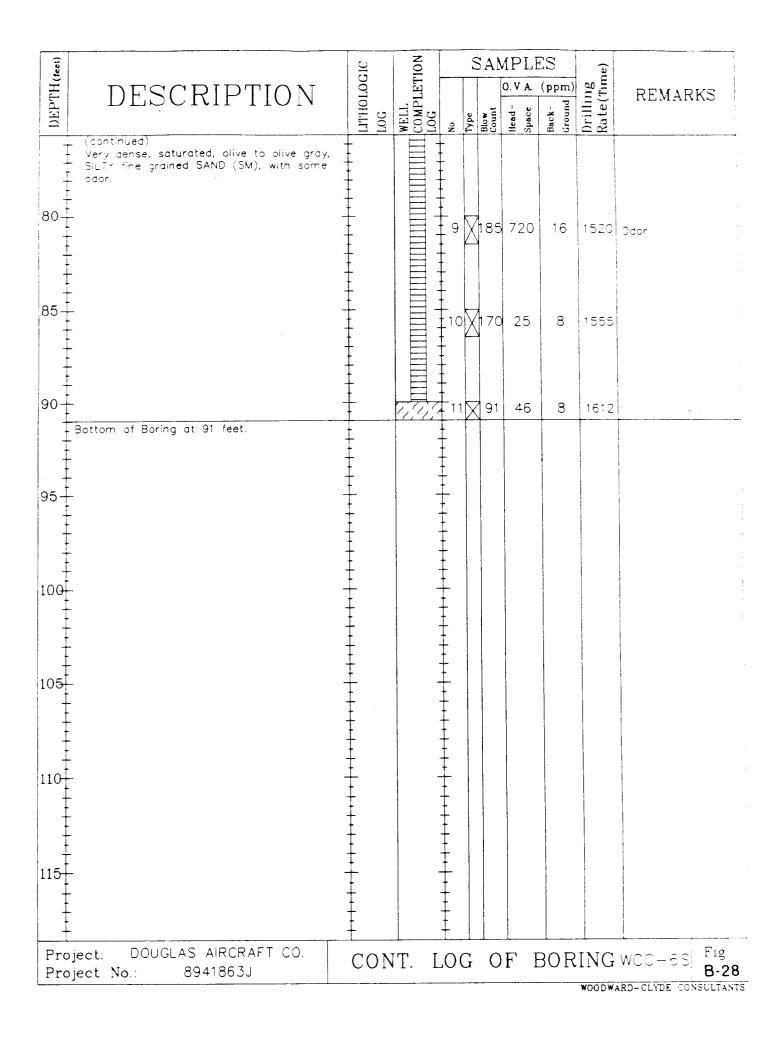
BORIN	IG DON			WCC-5	;						EL	EVATION D DATU	l M	48.2	22 Feet above MSL
ORTLU AGEN	NG		\ &c	R Drilling			DRILLER		TEXT		DA ST	ARTED	11-2	4-87	DATE 11-24-87
ORILLI				CME 7	5, 10	- inc	h H.S	5. A.			CO	MPLETIC	ХN ХN	91	ROCK — DEPTH (ft)
TYPE	OF CASING	4"	PVC		40 SCR	EEN FORATION	Lone		ar #0	130	Di/ Bo	METER RING (in	OF	10	DIAMETER OF 4
NO OF	ES		DIST	_	UND	NST.	4	COR	-	_	10	CCED B	Ÿ	- L -	CHECKED BY
WATER DEPTH	(ft)		FIRS	73	COM	IPL.	70	24	₩S.70.3	3 1/	2		B. Jaco	DDS	H. Reyes
DEP TH				DESCRI	PTION				WE LL LOG	O.		AMPI AMRO Cornt		Drilling Rate (Trne)	REMARKS
10 15 20 25	Mois with	little	odera e sar	te brown,	SILTY	CLAY (C						B 2		1400	Background OVA reading = 3-4 ppm
35								****							
Pro	ect:	DOU	GLAS	AIRCRA	AFT C	OMPAI	NY			10	 _	٥٤	BOD	INIC	WCC-5S Fig.
-	ect				863D					L		UF	BOR	IIVG	WCC-58 B-22
				0/41	<u> </u>		1							WOO	DWARD-CLYDE CONSULTANTS

			т			,		
DEP TH	DESCRIPTION	WELL LOG	S. O.	Туре	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40-	Moist, dark yellowlsh brown, SILTY CLAY (CL). (continued) with some organic roots and iron axide staining.						1445	
45	Dense, moist, dusky yellow to light olive brown, fine grained, SAND (SP) with little silt.		1	X	34	3		No odor.
55	Interbeds of Silty Sands and Clay.		2	X	37	5	1515	No odor.
60								
65	Becomes very dense.		3	X	70	4	1550	No odor.
70.	— Becomes wet. Dense, wet, moderate olive brown, fine grain SILTY SAND (SM-ML).	ned.	4	X	35	3		∑ Water at 73 feet. No odor.
80 Proje	ct: DOUGLAS AIRCRAFT COMPANY							
	ct No.: 8741863D	CONT.	LO	G	OF	BORIN	1G	WCC-5S Fig. B-23/24
	<u> </u>		-				wood	WARD-CLYDE CONSULTANTS

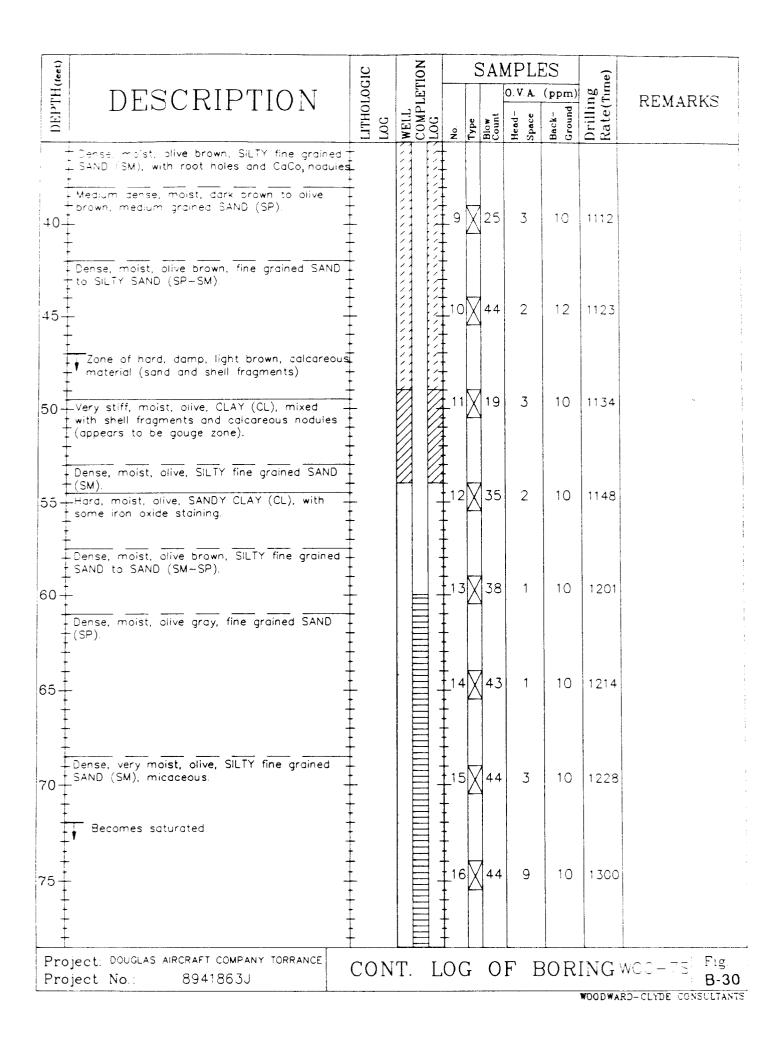


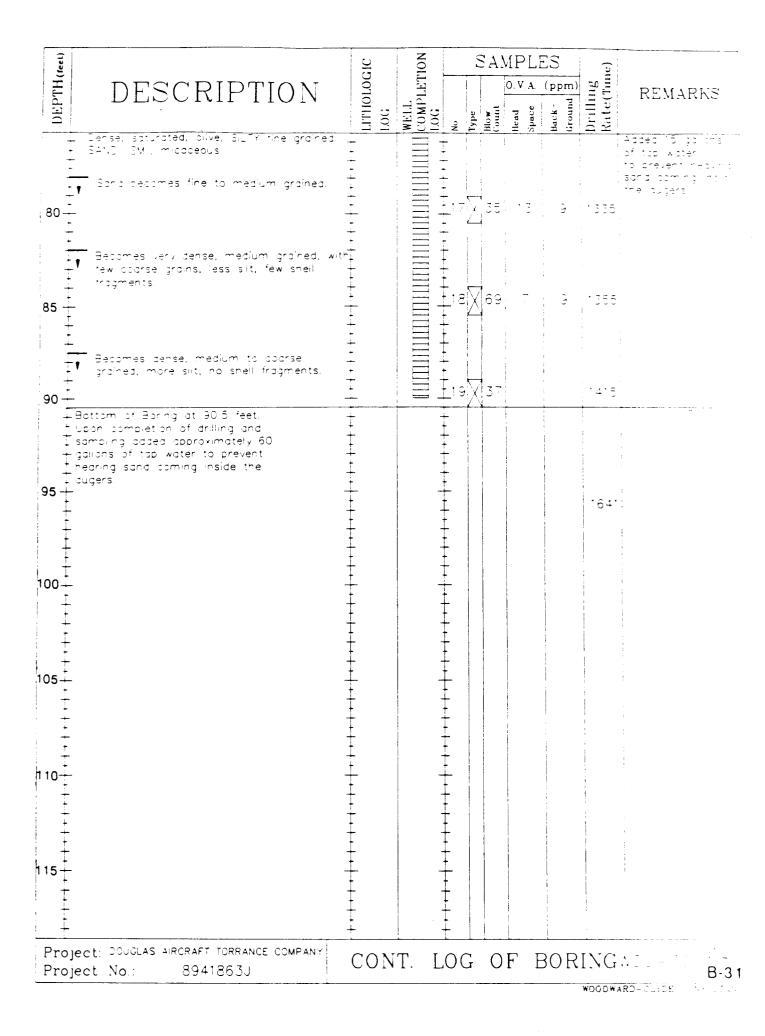






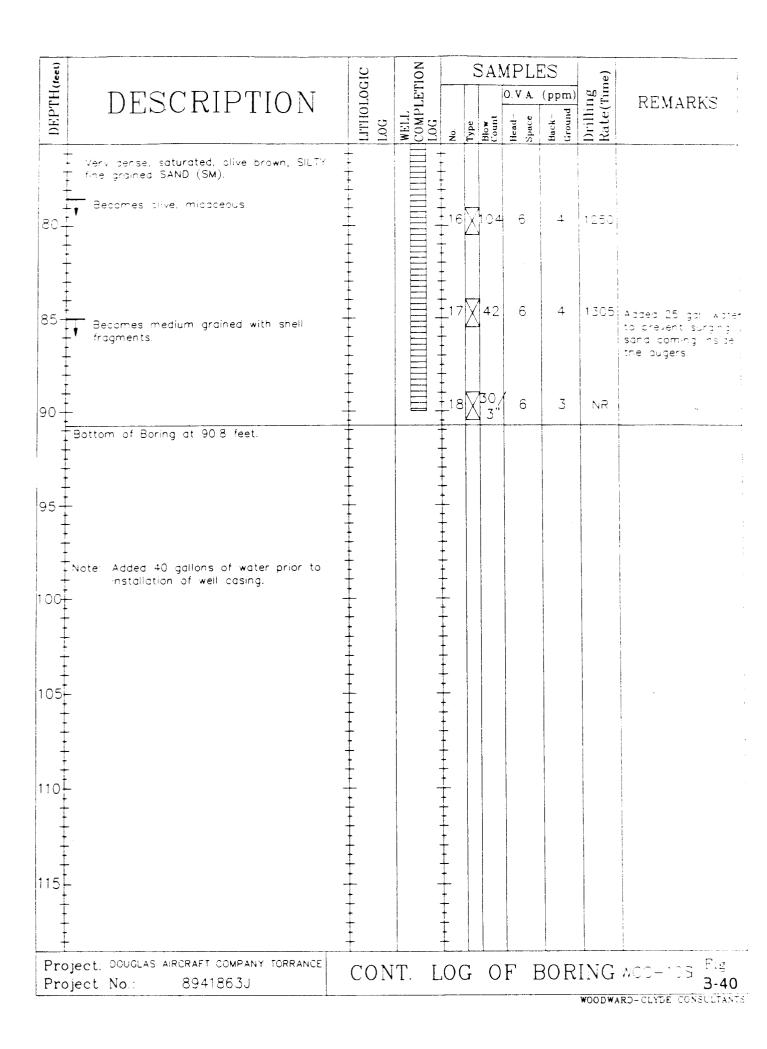
BOR	NG See Locatin Map			ELE	VATION DATU	м	48	3.29 f	eet MSL	7
AGE		·VI. 110	mero	DAT	E RTED	6-8-		DATE FINISI		
EQU	LING IPMENT CME 75 with 10—inch O.D.,H.S./	Α.		COM DEP	PLETIC TH (ft) N 9	0.5	ROCK		~~~
WEL).01 – in		BOR	IETER ING (i	OF	10	DIAME	TER OF	
SAN	C/SIZE OF Lonestar No. 0/30 OF DIST 1 [UNDIST. 0	TYPE/THOF SEAL	IICKNESS (S)	В			ets 5 f		lay grout 490 ↔	_
SAM	PLES	CORE	0	LOG	GED B	y Glaesm	nan		KED BY	
DEP	FIRST _ COMPL _	24 HRS.	-			Reye		W	. Razmajoo 	
DEPTH(feet)		21.5	WELL COMPLETION LOG		SAL	MPLE	S	(e)		
I.H.	DESCRIPTION	JTHOLOGIC JOG	ET			0. V. A.	(ppm)	Drilling Rate(Time	REMARKS	
EP	DLCCIII HON	'HO G	I ME		a) - 5	e d	k- und	te (MEMANNS	
		LITH	₩839	N O	Type Blow	Head- Space	Back- Ground	Dr.		
-	6—inch Asphait concrete, over 8—inch base material.	-		_					1	
-	Hard, moist, black, SANDY CLAY (CL). Becomes dark yellowish brown.	-		1	X 31	1	10	0913		
-	becomes dark yenowish brown.	-		_						
		-			.					
5 -	-	-		_ 2	X 45	1	10	0940		
-	-	- -								
-	-	- 	[3] [3]	-						
-	-	-		-						
	.	-		- 3	X 36	1	10	0951		
10 -	-	-			Δ,,	1	'	0331		
]		-								
+	Medim dense, moist, olive brown, SILTY fine grained SAND (SM).	-								
	grained SAND (SM).	<u>. </u>		-						
15	_			4	X 14	3	10	1002		
	-	-								
‡		-		-						
‡	Becomes dark yellowish brown, with trace	-								
‡	of clay, some decomposed roots.	-	11 12	-						
20+	-	-	<i>[4]</i>	5	X 25	2	10	1009		
Ŧ	·	-								
+	·	- -								
+	Hard, moist, dark olive brown, fine grained	-		-						
‡	SANDY CLAY (CL), with root holes.	-	11 17	6	X 31	2	10	1017		
25	- +	-		- 0	$\Delta $		10	1017		
+	†	- ·		-						
Ŧ	Dense, moist, olive brown, SILTY fine grained	-	41 14	-						
Ŧ	SAND (SM).	-	31 [3]	-	İ					
30 I	_	<u> </u>	31 13	7	√ 41	2	10	1058		
1			31 [3]	-	\hookrightarrow					
<u> </u>	I									
1	I	-	3 3	-						
+	T WAR THE RESERVE OF THE STATE	-	31 3	-						
35 	With root holes and small nodules of calcium carbonate (HCL Reaction).	_	31 13	8_	χ 32	2	10	1105		
	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE		<u> </u>	i	<u> </u>	1	I	<u> </u>	Fig	•
	pject No.: 8941863J		LOG	C	F	BOR	RING	, WC	$0 - 73 = \frac{119}{B-29}$.
									D-25 RD-CLYDE CONSULTAN	

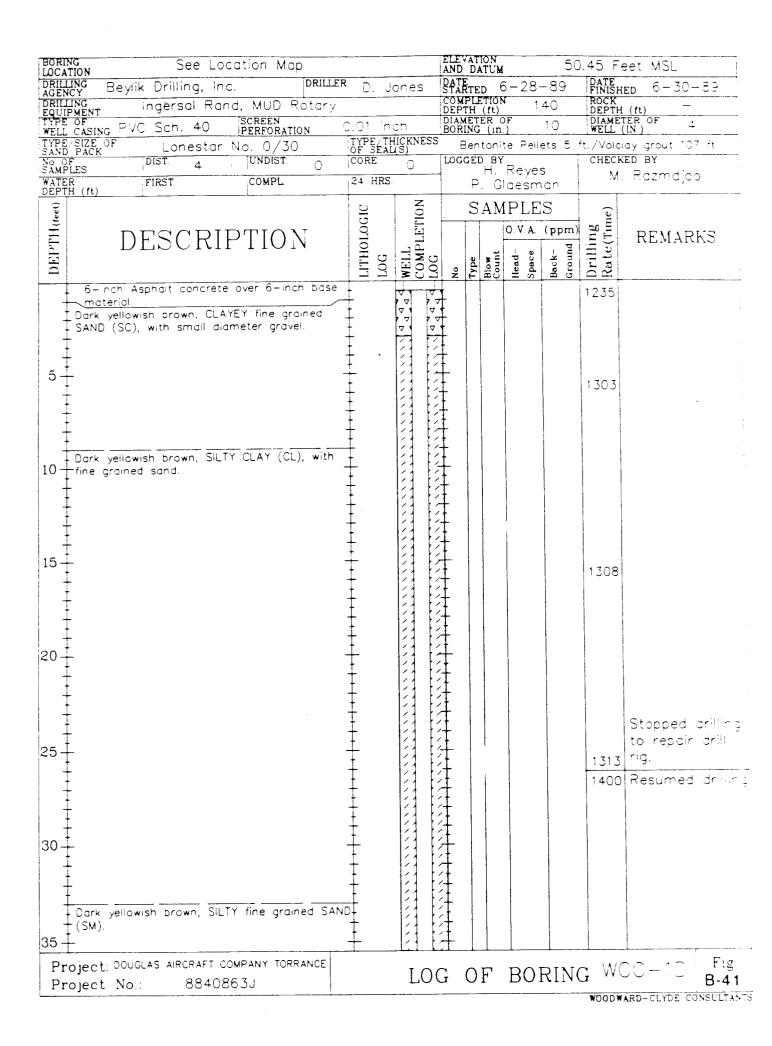


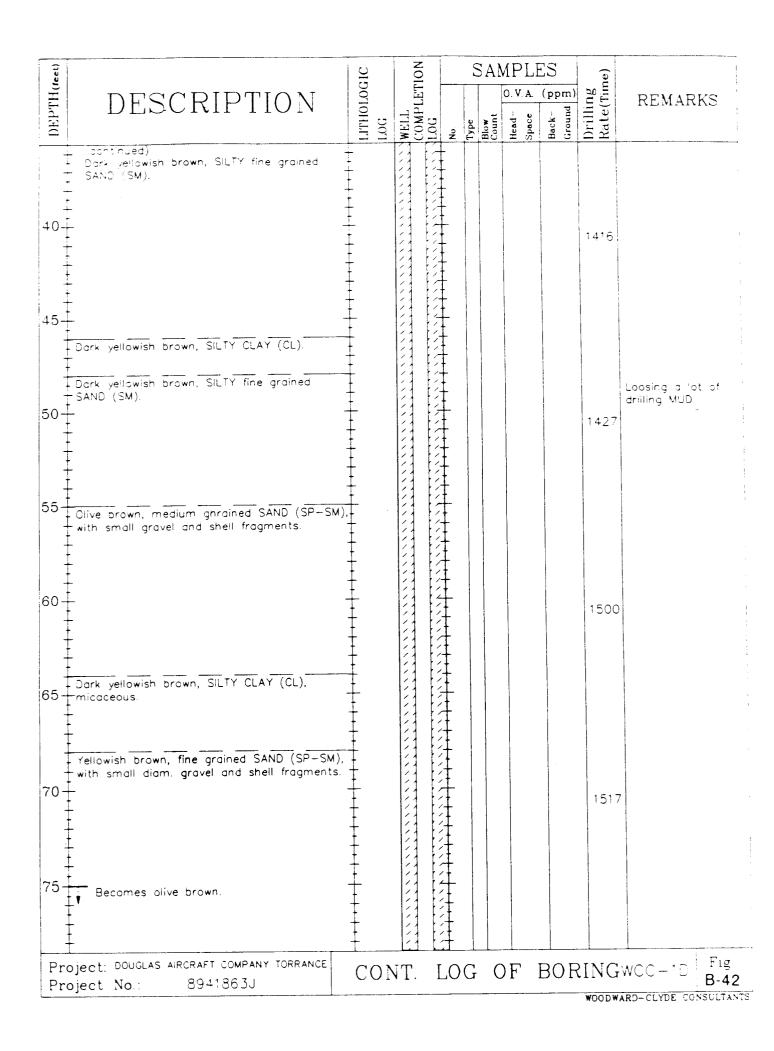


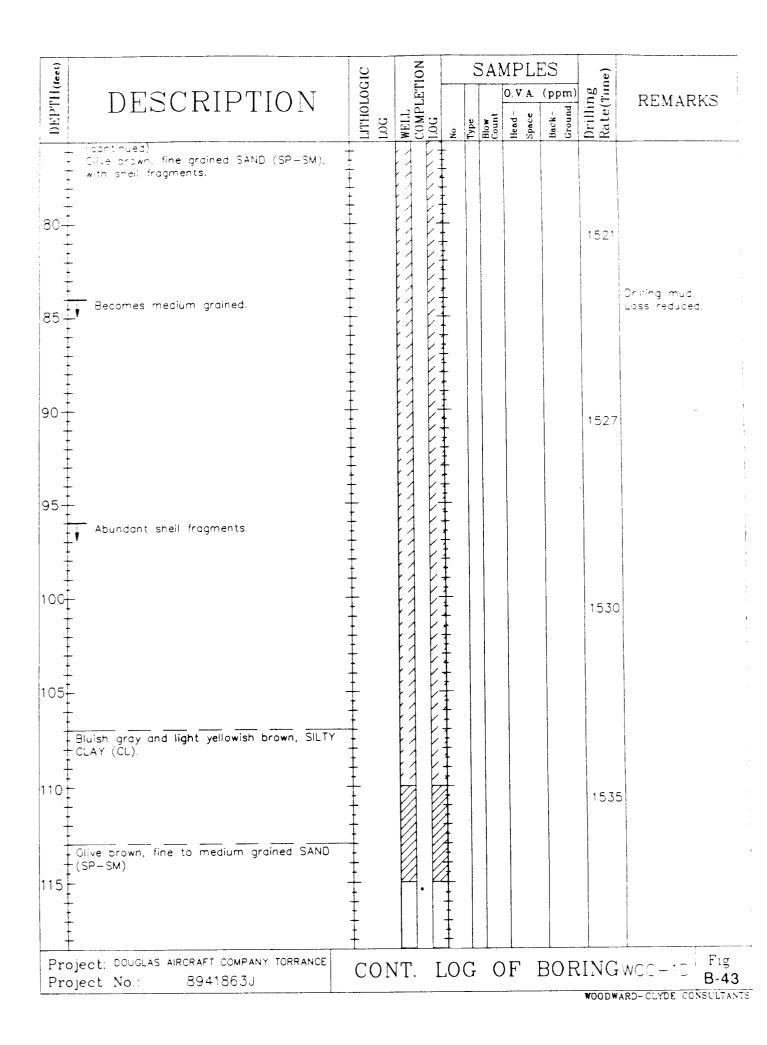
DESCRIPTION September Description De	BORI	NG See Location Map			ELE		ION TUM		50).56 fe	eet MSL
Belling CME 75 with 8 and 10 -inch 0 U.N.S.A.	DRIL	ING A & R Drilling Inc DRILLER	M. Ro	mero	DAT	E RTE	D 6	5-12-			
Caption Capt	DRIL	ING CME 75-with 8 and 10-inch 00			COM	PLE	TION			ROCK	I (ft)
Start Other Othe	TYPE WELL	OF Sch. 40 PVC SCREEN PERFORATION			BOR	AET ING	ER C))	10	DIAME WELL	TER OF ±
SAMPLES DESCRIPTION Samples DESCRIPTION SAMPLES SAMPLES SAMPLES SAMPLES Very soft to herd, most, olive brown, SLTY fine grained SAND (SL), with calca, veinlets Description Medium desse, most, olive brown, SLTY fine grained SAND (SL), with calca, veinlets Sand, (SM-ML), with some iron oxide storing and noisit, olive brown, SANDY CLAY (CL), with calca, veinlets Description Samples SAMPLES SAMPLES Very soft to herd, most, olive brown, SLTY fine grained SAND (SL) Hard, most, olive brown, SLTY fine grained SAND (SL) Very soft to herd, most, olive brown, SLTY fine grained SAND (SM-ML), with some iron oxide storing and nointer root holes. Hard, most, dore olive brown, SANDY CLAY (CL) Dense, moist, olive brown, SANDY CLAY (CL) SAMPLES SAMPLES SAMPLES Very soft to herd, most, olive brown, SLTY fine grained SAND (SM-ML), with some iron oxide storing ond nointer root holes. Hard, most, dore olive brown, SANDY CLAY (CL) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, fine grained SAND to SLTY SAND (SP-SM) Dense, moist, olive brown, SANDY CLAY to SANDY	SANE	PACK LOTTESTUT NO. 0/30		(S)	3 E				ets 5 f		
DESCRIPTION SAMPLES Ova (ppm) Ova	WATE	R FIRST _ COMPL _		0	LOG		. GI	aesm			
### Sense material, medium dense, moist, yellowish brown, CLAYEY SANDY (CLAY (CL.) 1 12 0 11 0800	eet)		2]	NO		S	ΑM	PLE	S	e)	
### Sense material, medium dense, moist, velowish brown, CLAYEY SAND (SC), decomposed grants. Stiff, very moist, very dark gray, SANDY 1	H(DESCRIPTION	007	ET				O. V. A.	(ppm)	ng Tim	REMARKS
### Sense material, medium dense, moist, yellowish brown, CLAYEY SANDY (CLAY (CL.). Stiff, very most, dork yellowish prown, SANDY (CLAY to CLAYEY fine grained SAND (CL.). Hard, moist, olive brown, SILTY CLAY (CL.). Hard, moist, olive brown, SILTY fine grained SAND (SM.). Very stiff to hard, moist, olive brown, SILTY fine grained SAND (SM.). Very stiff to hard, moist, olive brown, SILTY fine grained SAND (SM.). Very stiff to hard, moist, olive brown, SILTY fine grained SAND (SM.). Very stiff to hard, moist, olive brown, SILTY fine grained SAND (SM.). With CaCo, verifets SAND (SM.). With caliche verifets SAND (SM.). With some iron oxide staining and hairlike roat holes. Hard, moist, dark olive brown, SANDY CLAY (CL.), with caliche verifets Table SAND (SM.). Table SAN	EPJ	DESCRIPTION	LHO G	MPI MPI	5	e e	int.	-pr	k-		TVENT/TTVTC
### Base moterful, medium dense, moist, jellowisht brown, CLAYY (SAMD) (SC), decomposed granite. Stiff, very moist, very dork gray, SANDY CLAY (CL). 1	Ω		1 2	₩S.	2	Typ	85 ČB	Hee Spe	Bac	\(\frac{1}{2}\) \(\frac{1}{2}\)	
Stiff, very most, very dark gray, SANDY CLAY (CL) Stiff, very most, very dark gray, SANDY CLAY (CL) Hard, most, dark yellowish brown, SANDY CLAY to CLAYEY fine grained SAND (CL SC) SC) Hard, most, drive brown, SILTY fine grained SAND (SM). SC) SC) Hard, most, drive brown, SILTY fine grained SAND (SM). SAND (SM, with CaCo, veinlets SAND (SM-VL), with some iron oxide staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise staining, and natifier proto hoise prown, SANDY CLAY (CL), with colicne veinlets. The protocol house brown, sandy CLAY (CL), with colicne veinlets. The protocol house brown, sandy CLAY (CL), with colicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy CLAY (CL), with collicne veinlets. The protocol house brown, sandy clay (CL), with collicne veinlets. The protocol house brown, sandy clay (CL), with collicne veinlets. The pro			. } 11	トイオートイ	+	H					
Stiff, very moist, very dark gray SANDY CLAY (CL) Hard, moist, dark yellowish brown, SANDY CLAY to CLAYEY fine grained SAND (CL- SC). Hard, moist, alive brown, SILTY CLAY (CL) 10 Hard, moist, alive brown, SILTY fine grained SAND (SM). 15 Wery stiff to hard, moist alive brown, SILTY 10 11 CR23 Wery stiff to hard, moist alive brown, SILTY 10 CLAY (CL), with CaCo, veniets 10 CLAY (CL), with CaCo, veniets 11 CR23 CLAY (CL), with some iron oxide staining and half-like roto holes. Hard, moist, dark alive brown, SANDY CLAY (CL), with calche veniets. 17 May 1	-	$oxedsymbol{oxed}$ brown, CLAYEY SAND (SC), decomposed $oxedsymbol{oxed}$.	†	レイナ	$\frac{1}{4}$	X	12	0	11	0800	
### Hard, moist, drive brown, SILTY CLAY (CL). Hard, moist, drive brown, SILTY CLAY (CL).	-		-		+						
Hard, moist, dive brown, SILTY CLAY (CL). Medium dense, moist, dive brown, SILTY fine grained SAND (SM). Very stiff to hard, maist, dive brown, SILTY fine grained SAND (SM, with CaCo, veinlets. Dense, moist, dive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, moist, dark dive brown, SANDY CLAY (CL), with caliche veinlets. Dense, moist, dive brown, fine grained SAND to SILTY SAND (SP-SM) Project, Douglas Aircraft Company Torrance Project No: 8941863J LOG OF BORING WCC-35 Fig. B-32	- ا	- CLAY (CL). · I Hard, moist, dark yellowish brown, SANDY :	+		7 2	\bigvee	55	13	11	0810	
Hard, maist, alive brown, SILTY CLAY (CL). Medium dense, maist, alive brown, SILTY fine grained SAND (SM). Very stiff to hard, maist, alive brown, SILTY CLAY (CL), with CaCo, veinlets. Dense, maist, alive, SILTY fine grained sanD and hairlike root holes. Hard, maist, dark alive brown, SANDY CLAY (CL), with caliche veinlets. Dense, moist, alive, SILTY fine grained staining and hairlike root holes. The dark alive brown, SANDY CLAY (CL), with caliche veinlets. Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) Poject: Douglas Airchaft company Torrance Project No: 8941863J LOG OF BORING WCC-55 Fig. 8-32	5-	•	<u> </u>		Ŧ						
Medium dense, moist, olive brown, SILTY fine grained SAND (SM). Very stiff to hard, moist, olive brown, SILTY CLAY (CL), with CaCo, veinlets. 20 25 Dense, moist, olive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, moist, dark olive brown, SANDY CLAY (CL), with coliche veinlets. 30 Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM). Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project: No: 8941863J LOG OF BORING WCC — S Fig. B-32	-	- 30). -	‡								
Medium dense, moist, olive brown, SILTY fine grained SAND (SM). 15 Very stiff to hard, moist, olive brown, SILTY CLAY (CL), with CaCo, veinlets. 20 25 Dense, moist, olive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, moist, dark olive brown, SANDY CLAY (CL), with coliche veinlets. 30 Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM). Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project: No: 8941863J LOG OF BORING WCC = S Fig. B-32	-	Hard moist alive brown SILTY CLAY (CL)	‡	[3]	7						1
Medium dense, moist, alive brown, SILTY fine grained SAND (SM). Very stiff to hard, maist, alive brown, SILTY fine CLAY (CL), with CaCo, veinlets. 20 25 Dense, moist, alive, SILTY fine grained SAND (SM-ML), with same iron oxide staining and hairlike root holes. Herd, maist, dark alive brown, SANDY CLAY (CL), with caliane veinlets. 30 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) Project; DOUGLAS AIRCRAFT COMPANY TORRANCE Project; No.: 8941863J LOG OF BORING WCC-SS Fig. B-32		ingry, moist, drive brown, sierr dezir (de).	+		4 3		82	30	1 1	0813	:
15	10 -	- ·	+		才		02	30	' '	00,3	
15	-	-	†								
Very stiff to hard, maist, alive brown, SILTY CLAY (CL), with CaCo, veinlets. 20 25 Dense, moist, alive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, maist, dark alive brown, SANDY CLAY (CL), with caliche veinlets. 30 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) 25 Dense, moist, alive brown, sand staining and hairlike root holes. Hard, maist, dark alive brown, fine grained SAND to SILTY SAND (SP-SM) 26 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) 27 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) 26 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) 27 Dense, moist, alive brown, sand staining and hairlike root holes. 27 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM) 28 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained SAND to SILTY SAND (SP-SM) 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 4 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 5 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 5 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 5 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 5 Dense, moist, alive, saltry fine grained staining and hairlike root holes. 5 Dense, moist, alive, saltry fine grained staining and hairlike root holes.	-		Ī		\mathcal{I}						:
Very stiff to hard, moist, alive brown, SILTY CLAY (CL), with CaCo, veinlets. 20 25 Dense, moist, alive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and nairlike root holes. Hard, moist, dark alive brown, SANDY CLAY (CL), with caliche veinlets. 7 X 32 21 11 0846 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM). 8 X 31 43 10 0855 Project: OQUGLAS AIRCRAFT COMPANY TORRANCE Project No: 8941863J LOG OF BORING WCC-35 Fig. B-32		grained SAND (SM).	‡	134	4						i
Very stiff to hard, moist, olive brown, SILTY CLAY (CL), with CaCo, veinlets. 20 25 Dense, moist, alive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, moist, dark olive brown, SANDY CLAY (CL), with caliche veinlets. 7 X 32 21 11 0846 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM). 8 X 31 43 10 0855 Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No: 8941863J LOG OF BORING WCC-35 Fig. B-32	15 -	_	+	123	4	X	20	41	11	0823	
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CLÁY (CL), with CaCo, veinlets. 20 Dense, moist, olive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, moist, dark olive brown, SANDY CLAY (CL), with caliche veinlets. Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM). Project; Douglas arcraft company torrance Project No: 8941863J LOG OF BORING WCC-35 Fig. B-32	-	Very stiff to hard, moist, olive brown, SILTY	+		4						
25 Dense, moist, alive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike root holes. Hard, moist, dark olive brown, SANDY CLAY (CL), with caliche veinlets. 7 \ 32 \ 21 \ 11 \ 0846 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM). 8 \ 31 \ 43 \ 10 \ 0855 Project; Douglas aircraft company torrance Project No.: 8941863J LOG OF BORING WCC-35 Fig B-32	-		†		#						1
25 Dense, moist, alive, SILTY fine grained SAND (SM-ML), with some iron oxide staining and hairlike roat holes. Hard, moist, dark olive brown, SANDY CLAY (CL), with caliche veinlets. 7 \ 32 \ 21 \ 11 \ 0846 Dense, moist, alive brown, fine grained SAND to SILTY SAND (SP-SM). 8 \ 31 \ 43 \ 10 \ 0855 Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J	-	- -	†		1 5	∇	26	46	11	0830	
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30 Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM). Becomes more silty, grades to (SM) Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 Fig. B-32	_		'	123	#						
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Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM). Becomes more silty, grades to (SM). Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 Fig. B-32	-		I		狂						
Dense, moist, olive brown, fine grained SAND to SILTY SAND (SP-SM). Becomes more silty, grades to (SM). Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 B-32	30 -		+	[3]	247	·	[]32	21	11	0846	
to SILTY SAND (SP-SM). Becomes more silty, grades to (SM). Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 B-32		-	‡		4		1				
Becomes more silty, grades to (SM). Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 B-32	-		-		注						
Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 B-32	-	to SILTY SAND (SP-SM).	‡								
Project: DOUGLAS AIRCRAFT COMPANY TORRANCE Project No.: 8941863J LOG OF BORING WCC-35 B-32		<u>.</u>	+		往。	\downarrow	31	4.3	10	0855	
Project No.: 8941863J LUG UT BURING WC B-32	35 –		<u> </u>	111	1	<u> </u>	7_,	<u> </u>		1000	
Floject No.: 03410000	l .	-		T.O	G	O	F	BOI	RINC	; W(,
MUUUMAAD—CELDE CONSCERANCE	Pr	oject No.: 8941863J					•				B-32 ARD-CLYDE CONSULTANTS

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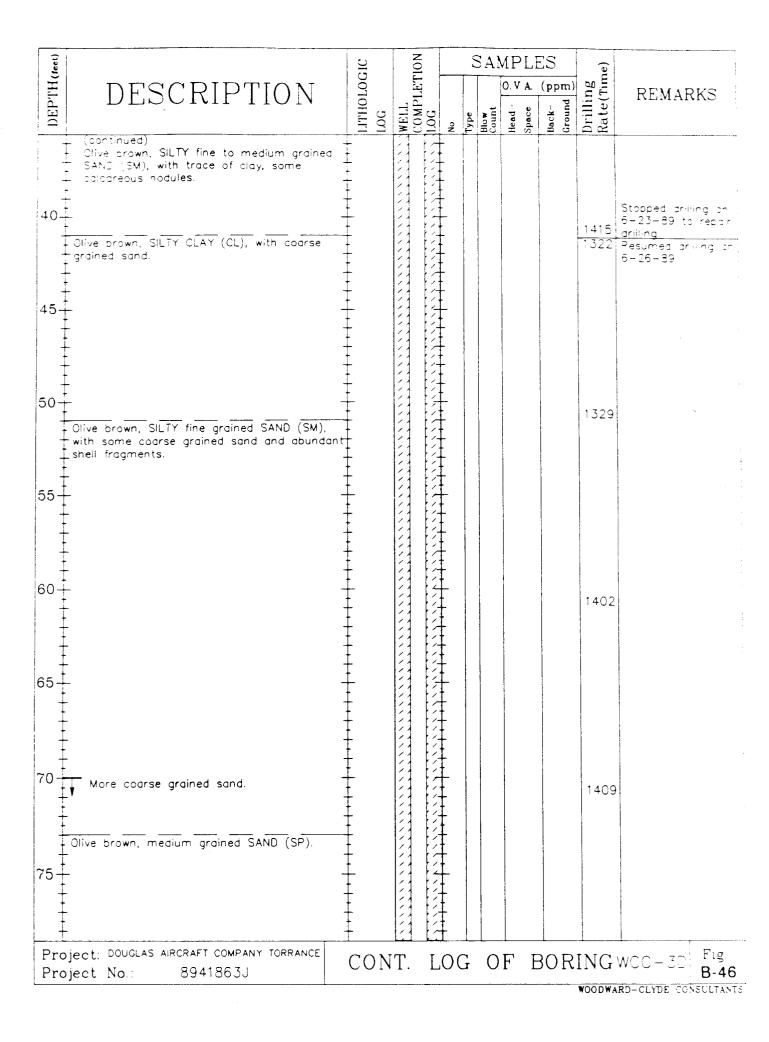


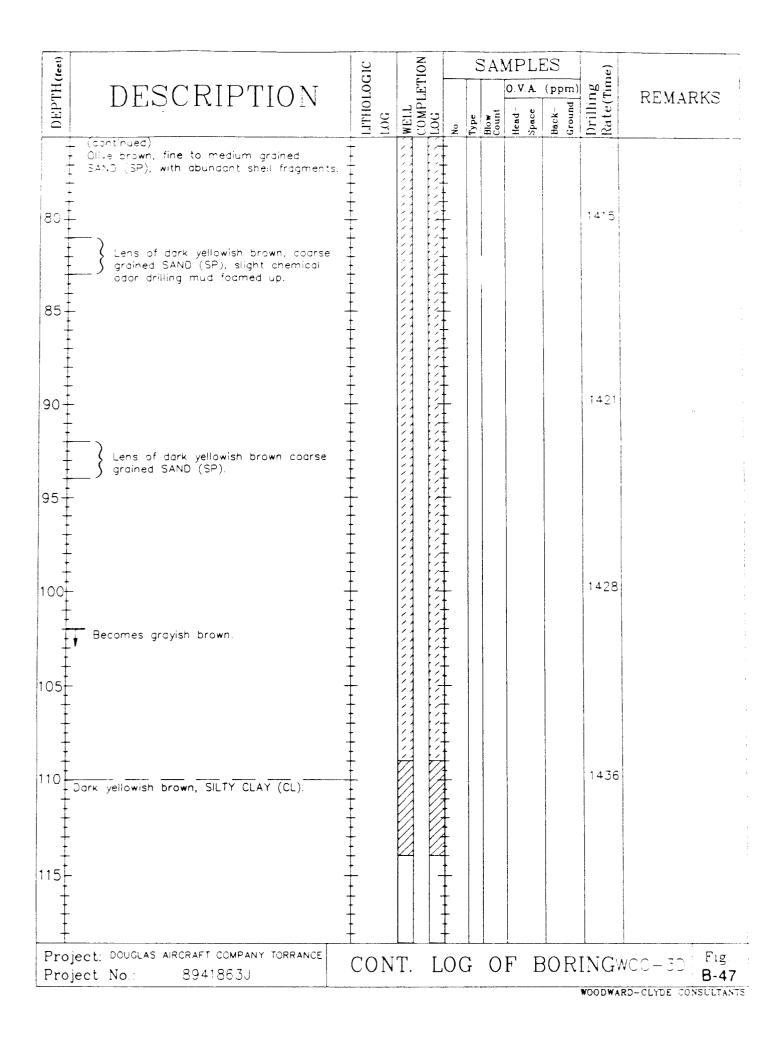




(cet)		21	N 0 <u>1</u>		S	AM	(P	LES	 S	(e)	
THa	DESCRIPTION	1.0G	LET			-	0. V. <i>z</i>		pm)	ng Tim	REMARKS
DEPTH(feet)	DECIVII HON	LITHOLOGIC 1.0G	WELL COMPLETION LOG	No	Type	Blow Count	Head-	Space	Ground	Drilling Rate(Time)	
-	Olive brown, fine to medium grained SAND (SP-SM).	+++++		-						·	
120	. Hard, olive, SILT (ML), micaceous (SILTSTONE -	-		-						1604	
	-Olive brown, medium grained SAND (SP). -	+		- 1							50% Care Recover,
†	-Moist, plive, SILT (ML), micaceous. -	+++++++++++++++++++++++++++++++++++++++		-							
125	- Conver Signal Transfer Shirt (Sim).	+		2						1615	60% Core Recovery
	Dark yellowish brown, medium grained -SAND (SP). -	+++++++++++++++++++++++++++++++++++++++									
130	- - -	+++++++++++++++++++++++++++++++++++++++								1644	20% Core Recovery
+		+++++++++++++++++++++++++++++++++++++++		3							
135	- -	+		 						1701	
+	Dark yellowish brown, and bluish gray, SILTY CLAY (CL).	+		4							20% Core Recovery
140	Bottomof Boring at 140 feet.	-								1725	
+		† †	-	+							
145	Initial drilling and sampling was completed on 28 June 1989. Boring was enlarged and well was constructed on 29 and 30 June 1989.	+ + + + + + + + + + + + + + + + + + + +	-	+ + + + + + + + + + + + + + + + + + + +							
150	· ·	T + +	-	<u> </u>							
+		+		<u></u>							
155	· -	+	-	+							
, J J F		+++++++++++++++++++++++++++++++++++++++	-	+++++++++++++++++++++++++++++++++++++++							
	ject: DOUGLAS AIRCRAFT COMPANY TORRANCE ject No.: 8941863J	t CON	T. L	.O(]]	0	F	В	DR	L ING	WCC-'2 F1g B-44

BORING See Location Map		ELEVATION AND DATUM 5	1.18 feet MSL
	ILLER D. Jones	DATE STARTED 6-23-89	DATE FINISHED 6-27-89
DRILLING Ingersal Rand, Mud Roto	ry	COMPLETION 140 DEPTH (ft)	ROCK — — — — — — — — — — — — — — — — — — —
TYPE OF WELL CASING PVC Sch. 40 SCREEN PERFORATION		DIAMETER OF BORING (in.) 10	DIAMETER OF 4
TYPE/SIZE OF Lonestor # 0/30 No OF DIST 4 UNDIST	TYPE/THICKNESS OF SEAL(S) CORE	Bentonite Pellets 5 LOGGED BY	ft./Voiclay grout 136 ft. CHECKED BY
SAMPLES	24 HRS	H. Reyes	M. Pazmajoo
DEPTH (ft)	!	P. Glaesman	
DESCRIPTION	LITHOLOGIC LOG WELL COMPLETION	SAMPLES	Berilling Rate(Time)
DESCRIPTION	010	0. V. A. (ppm)	REMARKS
390	LOG WELL	No. Type Blow Count Head- Space Back- Ground	rill
5-inch asphalt concrete cover.	<u> </u>	Typ Typ Blo Cou Spe Spe Gra	
6-inch Base material. Dark ye:lowish brown, SILTY fine grained		 	1326
SAND (SM).		+	
+			
		+	
+	+	‡	
†		1	-
1			
+		+	1347
10 with some clay.	+		1347
† *	<u> </u>		
Ī			
‡		‡	
15 +	- - - / /	‡	
†			
 			
† ‡	† [3] [3]		
20	†		1352
20 +	E [3] [3]	\mathbf{I}	
Ī	- I // !	I	
<u> </u>	<u> </u>		
+	1/4		
25 Becomes olive brown, fine to medium	+ : :		
SiLTY grained SAND (SM).	<u> </u>		
‡	†	7	
†	†		
30-	主。	<u> </u>	
<u> </u>			1358
Becomes clayey with some calcareous nodules.	1/1	(‡	
‡	‡ [2] [[
‡	+	#	
35 🕂	+ [1]		
Project: DOUGLAS AIRCRAFT COMPANY TORRANCE	1.00	אומסט שט ב	Fig
Project No.: 8941863J	LU	G OF BORING	# WOOD # SET CONSULTS





DESCRIPTION	LITHOLOGIC	WELL. COMPLETION LOG	lype (7)	AM o	PLE V A.	Back - d C C Cround (B	Drilling Rate(Time)	REMARKS
Distributed - Cork telowish prown, Static Stay (St.) The second Static fine ground SAND (SM)								40점 Done Peopler.
1 25 SAND SM). 1 3 Section of the s	+++++++++++++++++++++++++++++++++++++++						1510 1525	47% Obre Pebbuer
130 m = mard, reddish prown, SANDSTONE. = mard, ght yellowish prown to pluish gray, = SLLTY CLAYSTONE.	+						:537 :545	180명 Core Feature
135 — — — — — — — — — — — — — — — — — — —	+ + + + + + + + + + + + + + + + + + + +							
initial drilling and sampling was completed on 23 and 26 June 1989. Boring was enlarged and well was constructed on 27 June 1989.	+ + + + + + + + + + + + + + + + + + + +	+ + + + + + + + + + + + + + + + + + + +					Andrea Land III the same and the same	
155-	* + + + + + + + + + + + + + + + + + + +							
Project: CCUGL43 AIRCRAFT COMPANY TORRANCE Project No.: 8941863J	CON	T. LO	G	OF		OR	ING	2000 = 50 F.4 B-48

APPENDIX C ANALYTICAL RESULTS

June 28, 1989

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

12944



LABORATORY REPORT

Samples Received: Fifty-five (55) soils

Date Received: 6-13-89

Date Released for Analysis: 6-20-89

Purchase Order No: Proj#: 8941863J-Task 1/Douglas Aircraft Co.

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Thirteen (13) soils

Halogenated and Aromatic

Volatile Organics by EPA 8010/8020

Data Sheets

Page 1 of 1

Shelley Stuart

Senior Chemist

₱.J. Northington, Ph.D.

Technical Director

Client: WOODWARD-CLYDE CONSULTANTS
Job No: 12944

Date Matrix: Soil

Analyzed: 25-Jun-89 Samp Amt: 1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact:

Sample: B-6-3-3

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.005
Bromomethane	ИD	0.005
Vinyl Chloride	ND	0.003
Chloroethane	ND	0.005
Methylene Chloride	0.053	0.025
1,1-Dichloroethylene	ND	0.003
1,1-Dichloroethane	0.011	0.002
trans-1,2-Dichloroethylene	ND	0.002
Trichlorofluoromethane	ND	0.002
Chloroform	ND	0.002
1,2-Dichloroethane	ND	0.002
1,1,1-Trichloroethane	0.016	0.002
Carbon Tetrachloride	ND	0.002
Bromodichloromethane	ND	0.002
1,1,2,2-Tetrachloroethane	ND	0.002
1,2-Dichloropropane	ND	0.002
trans-1,3-Dichloropropylene	ND	0.002
Trichloroethylene	ND	0.002
Dibromochloromethane	ND	0.002
1,1,2-Trichloroethane	ND	0.002
Benzene	ND	0.001
cis-1,3-Dichloropropylene	ND	0.002
2-Chloroethyl Vinyl Ether	ND	0.004
Bromoform	ND	0.003
Tetrachloroethylene	ND	0.002
Toluene	0.064	0.001
Chlorobenzene	ND	0.004
Ethylbenzene	0.001	0.001
Total Xylenes	0.009	0.001
1,3-Dichlorobenzene	ND	0.001
1,4-Dichlorobenzene	ND	0.001
1,2-Dichlorobenzene	ND	0.001

Client: WOODWARD-CLYDE CONSULTANTS

Job No: 12944

Date

Analyzed: 23-Jun-89

Analysis: EPA 601/602 (8010/8020)

Sample: B-6-5-3

Matrix: Soil

1 gm Samp Amt: 500 Dil Fact:

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	2.5
Bromomethane	ND	2.5
Vinyl Chloride	ND	1.5
Chloroethane	ND	2.5
Methylene Chloride	ND	13
1,1-Dichloroethylene	ND	1.5
1,1-Dichloroethane	ND	1
trans-1,2-Dichloroethylene	ND	0.8
Trichlorofluoromethane	ND	1
Chloroform	ND	0.8
1,2-Dichloroethane	ND	1
1,1,1-Trichloroethane	12	0.8
Carbon Tetrachloride	ND	0.8
Bromodichloromethane	ND	0.8
1,1,2,2-Tetrachloroethane	ND	0.8
1,2-Dichloropropane	ND	0.8
trans-1,3-Dichloropropylene	ND	0.8
Trichloroethylene	45	0.8
Dibromochloromethane	ND	0.8
1,1,2-Trichloroethane	ND	0.8
Benzene	ND	0.5
cis-1,3-Dichloropropylene	ND	0.8
2-Chloroethyl Vinyl Ether	ND	2
Bromoform	ND	1.3
Tetrachloroethylene	ND	0.8
Toluene	1900	0.5
Chlorobenzene	ND	1.6
Ethylbenzene	51	0.5
Total Xylenes	390	0.5
1,3-Dichlorobenzene	ND	0.5
1,4-Dichlorobenzene	ND	0.5
1,2-Dichlorobenzene	ND	0.5
·		



Client: WOODWARD-CLYDE CONSULTANTS Sample: B-6-7-3

Job No: 12944

Date

Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 5000 Analyzed: 23-Jun-89 Analysis: EPA 601/602 (8010/8020)

Compound	Concent mg/		
Chloromethane	ND	25	
Bromomethane	ND	25	
Vinyl Chloride	ND	15	
Chloroethane	ND	25	
Methylene Chlo	ride ND	125	
1,1-Dichloroet	hylene ND	15	
1,1-Dichloroet	hane ND	10	
trans-1,2-Dich	loro hylene ND	7.5	
Trichlorofluor	omethane ND	10	
Chloroform	ND	7.5	i
1,2-Dichloroet	hane ND	10)
1,1,1-Trichlor		7.5	•
Carbon Tetrach	loride ND	7.5	
Bromodichlorom	ethane ND	7.5	5
1,1,2,2-Tetrac		7.5	
1,2-Dichloropr		7.5	
trans-1,3-Dich		7.5	
Trichloroethyl	ene ND	7.5	5
Dibromochlorom		7.5	
1,1,2-Trichlor	oethane ND	7.5	5
Benzene	ND		5
cis-1,3-Dichlo	ropropylene ND	7.5	5
2-Chloroethyl	Vinyl Ether ND	20)
Bromoform	ND	12.5	5
Tetrachloroeth	ylene ND	7.5	5
Toluene	_	48	5
Chlorobenzene	ND	25	5
Ethylbenzene	ND		5
Total Xylenes		21	5
1,3-Dichlorobe	nzene ND	•	5
1,4-Dichlorobe	nzene ND		5
1,2-Dichlorobe		!	5



Client: WOODWARD-CLYDE CONSULTANTS

Job No: 12944

Date Matrix: Soil

Analyzed: 23-Jun-89 Samp Amt: 1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1000

Sample: B-6-7-4

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	-=====================================
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND .	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	19	1
Chlorobenzene	ND	5
Ethylbenzene	ND	ĺ
Total Xylenes	6	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	ī
		

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-6-9-3

Job No: 12944

Date Matrix: Soil

Analyzed: 23-Jun-89 Samp Amt: 1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	5
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	59	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	23	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	320	1
Chlorobenzene	ND	5
Ethylbenzene	2.9	1
Total Xylenes	21	1
1,3-Dichlorobenzene	ND	ī
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-6-11-3

Job No: 12944

Date Matrix: Soil

Analyzed: 23-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	0.06	0.03
1,1-Dichloroethane	0.09	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.53	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	0.035	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.31	0.01
Chlorobenzene	ND	0.04
Ethylbenzene	ND	0.01
Total Xylenes	0.03	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

ND-Not Detected. The limit of detection is reported above.

BOE-C6-0014732

Sample: B-6-13-3 Client: WOODWARD-CLYDE CONSULTANTS
Job No: 12944

Date Matrix: Soil

Analyzed: 23-Jun-89 Samp Amt: 1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ИD	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	. 2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	7.7	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	9.9	1
Chlorobenzene	ND	4
Ethylbenzene	ND	1
Total Xylenes	2.9	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	1
1,2-Dichlorobenzene	ND	1

ND-Not Detected. The limit of detection is reported above.

BOE-C6-0014733

Client: WOODWARD-CLYDE CONSULTANTS
Job No: 12944 Sample: B-7-7-3

Date Matrix: Soil

Analyzed: 25-Jun-89 1 gm Samp Amt: Samp Amt: 1
Dil Fact: 40 Analysis: EPA 601/602 (8010/8020)

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.2
Bromomethane	ND	0.2
Vinyl Chloride	ND	0.2
Chloroethane	ND	0.2
Methylene Chloride	ND	1
1,1-Dichloroethylene	ND	0.12
1,1-Dichloroethane	ND	0.08
trans-1,2-Dichloroethylene	ND	0.06
Trichlorofluoromethane	ND	0.08
Chloroform	ND	0.06
1,2-Dichloroethane	ND	0.08
1,1,1-Trichloroethane	0.15	0.06
Carbon Tetrachloride	ND	0.06
Bromodichloromethane	ND	0.06
1,1,2,2-Tetrachloroethane	ND	0.06
1,2-Dichloropropane	ND	0.06
trans-1,3-Dichloropropylene	ND	0.06
Trichloroethylene	0.09	0.06
Dibromochloromethane	ND	0.06
1,1,2-Trichloroethane	ND	0.06
Benzene	ND	0.04
cis-1,3-Dichloropropylene	ND	0.06
2-Chloroethyl Vinyl Ether	ND	0.2
Bromoform	ND	0.1
Tetrachloroethylene	ND	0.06
Toluene	1.7	0.04
Chlorobenzene	ND	0.33
Ethylbenzene	ND	0.04
Total Xylenes	0.09	0.04
1,3-Dichlorobenzene	ND	0.08
1,4-Dichlorobenzene	ND	0.08
1,2-Dichlorobenzene	ND	0.08

ND-Not Detected. The limit of detection is reported above.

BOE-C6-0014734

Client: WOODWARD CLYDE CONSULTANTS Sample: B-7-8-3

Job No: 12944

Date

Matrix: Soil
Samp Amt: 1 gm
Dil Fact: 1000 Analyzed: 25-June-89 Analysis: EPA 601/602 (8010/8020)

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ИD	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	ND	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	ND	1
Chlorobenzene	ND	5
Ethylbenzene	ND	1
Total Xylenes	1	1
1,3-Dichlorobenzene	ND	ī
1,4-Dichlorobenzene	ND	ī
1,2-Dichlorobenzene	ND	1

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-7-9-3

Job No: 12944

Date
Analyzed: 25-Jun-89

Matrix: Soil
Samp Amt.

Analyzed: 25-Jun-89 Samp Amt: 1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1000

Compound ====================================	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	10	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND	1.5
Benzene	ИD	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	40	1
Chlorobenzene	ND	1.1
Ethylbenzene	ND	1
Total Xylenes	1	1
1,3-Dichlorobenzene	ND	ī
1,4-Dichlorobenzene	ND	ī
1,2-Dichlorobenzene	ND	1

Client: WOODWARD-CLYDE CONSULTANTS

Job No: 12944

Date

Matrix: Soil

Analyzed: 25-Jun-89 Analysis: EPA 601/602 (8010/8020)

Samp Amt: 1 gm Dil Fact: 1000

Sample: B-7-9-4 :

Compound	Concentration mg/Kg ===================================	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ИD	25
1,1-Dichloroethylene	ND	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	12	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	ND ·	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	25	1
Chlorobenzene	ND	8.3
Ethylbenzene	ND	1
Total Xylenes	ND	ī
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	ī
1,2-Dichlorobenzene	ND	i
		•

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-7-11-3

Job No: 12944

Date Matrix: Soil

1 gm Analyzed: 25-Jun-89 Samp Amt: Analysis: EPA 601/602 (8010/8020) Dil Fact: 1000

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	5
Bromomethane	ND	5
Vinyl Chloride	ND	3
Chloroethane	ND	5
Methylene Chloride	ND	25
1,1-Dichloroethylene	57	3
1,1-Dichloroethane	ND	2
trans-1,2-Dichloroethylene	ND	1.5
Trichlorofluoromethane	ND	2
Chloroform	ND	1.5
1,2-Dichloroethane	ND	2
1,1,1-Trichloroethane	880	1.5
Carbon Tetrachloride	ND	1.5
Bromodichloromethane	ND	1.5
1,1,2,2-Tetrachloroethane	ND	1.5
1,2-Dichloropropane	ND	1.5
trans-1,3-Dichloropropylene	ND	1.5
Trichloroethylene	ND	1.5
Dibromochloromethane	ND	1.5
1,1,2-Trichloroethane	4	1.5
Benzene	ND	1
cis-1,3-Dichloropropylene	ND	1.5
2-Chloroethyl Vinyl Ether	ND	4
Bromoform	ND	2.5
Tetrachloroethylene	ND	1.5
Toluene	41	1
Chlorobenzene	ND	8.3
Ethylbenzene	ND	1
Total Xylenes	1.7	1
1,3-Dichlorobenzene	ND	1
1,4-Dichlorobenzene	ND	i
1,2-Dichlorobenzene	ND	î



Client: WOODWARD CLYDE CONSULTANTS
Job No: 12944 Sample: B-7-13-3

Date Matrix: Soil

Analyzed: 26-JUNE-89 1 gm Samp Amt: Dil Fact: 50 Analysis: EPA 601/602 (8010/8020)

	Concentration	Detection
Compound	mg/Kg	Limits
		250
Chloromethane	ND	250
Bromomethane	ND	250
Vinyl Chloride	ND	150
Chloroethane	ND	250
Methylene Chloride	20000	1250
1,1-Dichloroethylene	600	150
1,1-Dichloroethane	ND	100
trans-1,2-Dichloroethylene	ND	75
Trichlorofluoromethane	ND	100
Chloroform	ND	75
1,2-Dichloroethane	ND	100
1,1,1-Trichloroethane	59000	75
Carbon Tetrachloride	ND	75
Bromodichloromethane	ND	75
1,1,2,2-Tetrachloroethane	ND	75
1,2-Dichloropropane	ND	75
trans-1,3-Dichloropropylene	ND	75
Trichloroethylene	ND	75
Dibromochloromethane	ND	75
1,1,2-Trichloroethane	ND	75
Benzene	ND	50
cis-1,3-Dichloropropylene	ND	75
2-Chloroethyl Vinyl Ether	ND	200
Bromoform	ND	125
Tetrachloroethylene	140	75
Toluene	450	50
Chlorobenzene	ND	300
Ethylbenzene	ND	50
Total Xylenes	ND	50
1,3-Dichlorobenzene	ND	100
1,4-Dichlorobenzene	ND	100
1,2-Dichlorobenzene	ND	100



Woodward-Clyde Consultants



SHIPMENT NO.:_4

PAGE 2 OF 3

DATE 6 / 13/89

CHAIN OF CUSTODY RECORD

PROJECT NO 8941862 1- TACK 1

Sample Number	Location	Type of Material	Sample Method	Type of	Container	Type	of Prese	rvation imical	Analysi	s Required
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B - 3-4										
B-7-4-3										
R-7-4-4										
8-7-5-2		† † † † † † † † † † † † † † † † † † †								
B-7-5-4		1 1								
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B-7-03	 	+-1,	+-+-							
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Reason		g / Storage	Requiremen	τ ς .						

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO .: 4 PAGE / OF 3

PROJECT NAME: PORGLAS AIRCRAFT COMPUNE

DATE 6/3/89

Sample Number	Location		Sample	Type of Container		of Preservation	Analysi	s Required *
	<u> </u>	Material	Method	DONESTA	Temp	Chemical	Calter	- · AL:-
3-6-1-3	B-6	Soil	MOD.	BRASS TUBE	14	Nurc	Calle	T- Alish
3-6-1-4		 	1		+-+		Law	yazı
R-6-3-3		<u> </u>			┤ ┤ ┤			
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B-67-4			<u> </u>		$\bot \bot \bot$			
B-6-8-4								
B-6-9-3								
B-6-9-9								
8-6-10-3								
B-6-10-4	1,1,							
B-6-11-3	\ \ \	V	U	V	7/20	2 V		
Total Number of	Samples Sh	ipped: 5	Sample	r's Signature:		am		
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	/ Handling	/ Storage	Requiremen	its:				
Special Shipment								
Special Shipment								

			Clyde Consult			MENT NO.: 4
	(CHAIN OF	CUSTODY RECO	ORD		E_3 OF_3
		Darkin	S ARCOAFT	COMMON	M DAT	E 6 113187
PRO	DJECT NAME:	1004C	21. TICK	CONTRACT.	×-t	·
PRO		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2J- TASKI			
Sample Number Locati	O(1	Sample Method	Type of Container	Type	of Preservation Chemical	Analysis Required
8-7-7-4 8-7	Material	MOD.	BRASS TUBS	KE	NOME	CONTACT:
3-7-7-1 18-7	Sol	CAUF.	pros (vap	1	1	Alistaile
0-7-8-4		1				Callender
B-7-9-3						1719 835-680
3-7-9-4						
B-7-10-3				\bot		
3-7-10-4				1-1		
B-7-11-3		 		- - 	 	
B-7-11-4		+		+	 	
13-7-12-3		+		+ + -	 	
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Total Number of Sample	Shipped: 5	Sample	r's Signature:	CAR	10	1 0
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Company A 1	WCE,	NCIS	Company		7-1	9.4
	May B	mas_	Received By: A	. ^-	<u> </u>	Date
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Printed Name	45 my		Printed Name_)) (A)		Time
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Company Reason						
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Reason						
Special Shipment / Hand	lling / Storage	Requiremen	its:			

* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421

RECEIVED

JUL O 5

June 30, 1989

Santa Ana, CA 92705

WCC-SANTA

WEST COAST ANALYTICAL SERVICE, INC.

AMAURICAN CHEMICIS

Α

Attn:

Dr. Alistaire Callender

JOB NO.

12962

WOODWARD-CLYDE CONSULTANTS

203 N. Golden Circle Drive

LABORATORY REPORT

Samples Received: Fifty-six (56) soils

Date Received: 6-15-89

Date Released for Analysis: 6-20-89

Purchase Order No: Proj#: 8941863J/Task 1-Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Eight (8) soils

Halogenated and Aromatic

Volatile Organics by EPA 8010/8020

Data Sheets

Page 1 of 1

Shelley Stuart Senior Chemist

D.J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

Client: WOODWARD CLYDE CONSULTANTS Sample: B-8-10-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	ND	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ИD	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.27	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01



Client: WOODWARD CLYDE CONSULTANTS
Job No: 12962 Sample: B-8-11-3

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND .	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	ND	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.04	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ИD	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-8-12-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Analysis: EPA 601/602 (8010/8020) Samp Amt: Dil Fact: 0.1 gm 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.12	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.06	0.01
Chlorobenzene	ND	0.07
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-8-13-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	0.04	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.44	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether Bromoform	ND	0.04
	ND	0.03
Tetrachloroethylene Toluene	ND	0.02
Chlorobenzene	1.0	0.01
Ethylbenzene	ND ND	0.07
Total Xylenes		0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-prontoropenzene	ND	0.01

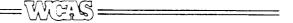
Client: WOODWARD CLYDE CONSULTANTS Sample: B-8-14-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02 -
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.05	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	25	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01



Client: WOODWARD-CLYDE CONSULTANTS Sample: B-9-9-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	0.03	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.02	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	0.08	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ИD	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.1	0.01
Chlorobenzene	ND	0.07
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD CLYDE CONSULTANTS Sample: B-9-11-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-JUNE-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	ND	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	0.02	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.11	0.01
Chlorobenzene	ND	0.01
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Client: WOODWARD-CLYDE CONSULTANTS Sample: B-9-12-3

Job No: 12962

Date Matrix: Soil

Analyzed: 28-Jun-89 Samp Amt: 0.1 gm Analysis: EPA 601/602 (8010/8020) Dil Fact: 1

Compound	Concentration mg/Kg	Detection Limits
Chloromethane	ND	0.05
Bromomethane	ND	0.05
Vinyl Chloride	ND	0.03
Chloroethane	ND	0.05
Methylene Chloride	ND	0.25
1,1-Dichloroethylene	ND	0.03
1,1-Dichloroethane	ND	0.02
trans-1,2-Dichloroethylene	ND	0.02
Trichlorofluoromethane	ND	0.02
Chloroform	ND	0.02
1,2-Dichloroethane	ND	0.02
1,1,1-Trichloroethane	0.03	0.02
Carbon Tetrachloride	ND	0.02
Bromodichloromethane	ND	0.02
1,1,2,2-Tetrachloroethane	ND	0.02
1,2-Dichloropropane	ND	0.02
trans-1,3-Dichloropropylene	ND	0.02
Trichloroethylene	ND	0.02
Dibromochloromethane	ND	0.02
1,1,2-Trichloroethane	ND	0.02
Benzene	ND	0.01
cis-1,3-Dichloropropylene	ND	0.02
2-Chloroethyl Vinyl Ether	ND	0.04
Bromoform	ND	0.03
Tetrachloroethylene	ND	0.02
Toluene	0.06	0.01
Chlorobenzene	ND	0.07
Ethylbenzene	ND	0.01
Total Xylenes	ND	0.01
1,3-Dichlorobenzene	ND	0.01
1,4-Dichlorobenzene	ND	0.01
1,2-Dichlorobenzene	ND	0.01

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMI	ENT	NO.:	_5_
PAGE_	1_	_OF_	3
DATE			_

PROJECT NAME: DUGLAS AIRCRAFT CO.
PROJECT NO.: 3941863 J - TASK 1

Sample Number	Location	Type of		Type of Container		of Preservation Chemical	Analysis	Required *
3 3		Material	Method Ma A	00155 005	Temp	Nove	COVRCI	· _
3-8-1-3	3-3	Soil	<i>1100.</i>	3,24SS TUBE	100	, ,		ire Colle
3-8-1-4		ļ	CALIF.		+ + -		1-11/3	7- (38)
3-2-3					 		114) X	35-628
3-2-2-4					11-1			
B-8-3-3								
2-2-3-4								
13-8-4-3	 	+ - +						
3-8-4-5	 	-						
8-8-4-9	} -	 						
5-5-5	 	 			++-			
3-8-5-4	<u> </u>	 	 		+			
B-8-6-3								
8-2-6-4					+			
3-8-7-3								
B-8-7-4								
3-8-3-3								
3-8-8-4								
3-8-8-1	+	 	 					
D-8-9-3	,	+	1		11			
13-8-9-1	 		 	+	++-			
3-8-10-3	+ + + -	 \	 	 	$-+$ \forall	 		
3-8-10-5	<u> </u>	Y	1 4	<u> </u>	DA 9	0		
Total Number of	Samples St	ripped: 5	Sample	er's Signature:	TOPE	2 1		Date
Relinquished By:	260	Alan.		Received By:	Roses &	Sim		6/15/8
Signature	/19×1	eter GI	ai Men	Signature Printed Name	1400	6 Slaw		
Printed Name_		WCZ	W Y V	Company	A-1			Time
CompanyReason	de ivo	, TO M	C4S		•			9:50
Relinquished By	·	7.		Received By: A	()-1	7. 1 . 1	مسا	Date
Signature	ms P.	Sign	<u></u>	Signature	mx '	cichara		10/15/
Printed Name	tain	D. \$1.1	125	Printed Name_	1 A A	0		Time
Company	A~}_			Company	-₩CP	₩129	62	12:30
Reason								Date
Relinquished By:				Received By:			_	/ /
Signature								
Printed NameCompany								Time
Reason								ļ
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Printed Name_								Time
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Reason			_					
Reason Special Shipmen	/ Handlin	g / Storage	Requireme	nts:				
	/ Handlin	g / Storage	Requireme	nts:				
	/ Handlin	g / Storage	Requireme	nts:				

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: PAGE 2 OF 3 DATE 6/14/89

	XO 1	AS AIRCRE	1. W.		
	CT NO.: 07 4	1863 J - Tas		f Preservation	Analysis Required*
Sample Number Location	Material Method		Temp	Chemical	
B-31-3 B-8	S&1 - ,400.	BRAS TIBE	KE	NOME	CONTACT:
B-8-11-4	1 COLIF.		1 1 1		Al. staire
B-8-12-3					Callender
B-2-12-4					(714) 335-6286
8-8-13-3					
B-2-13-4					
B-8-14-3					
B-8-14-4 V					
B-9-1-3 B-9					
B-9-1-4					-
B-9-2-3	+ +				
3-9-2-1	 		1 1		
3-3-5	++++		1		
<u>B-9-3-4</u>	+		+ + + +		
B-9-4-3	 		+ + +		
B-9-4-4		 	+ + +		
B-9-5-5	++-+-				
B-9-5-9			+		
B-9-6-3		1 - Y	+ 5	—	
B-9-6-41 V	1 4		DA 1		
Total Number of Samples S	hipped: 55 Sample	r's Signature:	THE A		Date
Relinquished By:	If som	Received By: Signature	umf.	Sian	6/15/87
SignaturePrinted Name	ter Glasman	Printed Name_	Latery	P. 15:045	Time
Company	WCC	Company	A-1 1		9:50
Reason deliny	to Was		77 -		
Relinquished By:	1 -	Received By: Signature	m UV	chards	(Q / 15 /8
Signature Com C. Printed Name Lance	a River	Printed Name			
Company A	1.10	Company	WACA	5 1012	962 Z:300
Reason			.,,,,,		
Relinquished By:		Received By:			Date
Signature					
Printed Name		Printed Name Company			Time
Reason					
Relinquished By:		Received By:			Date
Signature		Signature			
Printed Name					
Company		Company			
Reason					
Special Shipment / Handlin Note — This does not co	g / Storage Requireme				

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 5 PAGE 3 OF 3

DATE 6 114189 PROJECT NAME: DOUGUAS AIRCRAFT CO. 8941863 J-TASK 1 PROJECT NO .: ___ Type of Preservation Type of Sample Analysis Required * Type of Container Sample Number Location Material Method Chemical Temp NOME BRASS TURE B-9 MOD ICE CONTACT: SAIL Alistaire CALIF. 39-7-4 Callener B-9-11-3 K-9 - 12-4 Total Number of Samples Shipped: 56 Sampler's Signature: Date Received By: Relinquished By: Signature 6/15/89 Signature_ Glassur Printed Name_ Printed Name Time Company_ Company__ 9:50 Reason to delive Was Date Received By: Relinquished By: 11/15/8 Signature 1 Signature Printed Name_ Printed Name_____ Company_ Company____ Reason_ Date Received By: Relinquished By: Signature_ Signature_ Printed Name_ Printed Name_ Time Company___ Company Reason ___ Date Received By: Relinguished By: Signature_ Signature_ Printed Name___ Printed Name_ Time Company__ Company__ Reason ____ Special Shipment / Handling / Storage Requirements:

* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421

July 27, 1989

WEST COAST ANALYTICAL SERVICE, INC.

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

13191

A

LABORATORY REPORT

Samples Received: Nine (9) liquids in quadruplicate and one (1)

liquid in duplicate

Date Received: 7-13-89

Date Released for Analysis: 7-17-89

Purchase Order No: Proj#: 8941863J-Task 1/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

Analysis

Results

Fifteen (15) liquids

Volatile Organics

by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton

Senior Chemist

B. Michael Hovanec Senior Staff Chemist CLIENT: WOODWARD-CLYDE SAMPLE: D.I.-A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V1
DATE EXTRACTED: 07/24/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/24/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
			=======================================
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	ī.
108-90-7	CHLOROBENZENE	ND	ī.
	CHLOROETHANE	ND	5.
	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3		ND	1.
74-87-3		ND	5.
108-41-8		ND	1.
	DIBROMOCHLOROMETHANE	ND	1.
			1.
	1,2-DICHLOROBENZENE	ND	1.
	1,3-DICHLOROBENZENE	ND	
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE		5.
75-01-4		ND	
95-47-6	VINYL CHLORIDE	ND	5.
33 -4/- 0	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: D.I.-A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-1S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V10
DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 250UL
DATE ANALYZED: 07/21/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	100.
71-43-2	BENZENE	ND	20.
75-27-4	BROMODICHLOROMETHANE	ND	20.
75-25-2	BROMOFORM	ND	20.
74-83-9	BROMOMETHANE	ND	100.
78-93-3	2-BUTANONE (MEK)	ND	100.
75-15-0	CARBON DISULFIDE	ND	20.
56-23-5	CARBON TETRACHLORIDE	ND	20.
108-90-7	CHLOROBENZENE	ND	20.
75-00-3	CHLOROETHANE	ND	100.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	200.
67-66-3	CHLOROFORM	ND	20.
74-87-3		ND	100.
108-41-8		ND	20.
124-48-1		ND	20.
	1,2-DICHLOROBENZENE	ND	20.
	1,3-DICHLOROBENZENE	ND	20.
106-46-7		ND	20.
75-34-3	1,1-DICHLOROETHANE	ND	20.
107-06-2	1,2-DICHLOROETHANE	ND	20.
75-35-4	1,1-DICHLOROETHYLENE	900.	20.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	20.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	20.
78-87-5	1,2-DICHLOROPROPANE	ND	20.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	20.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	20.
100-41-4	ETHYLBENZENE	ND	20.
106-93-4	ETHYLENE DIBROMIDE	ND	20.
76-13-1	FREON-TF	ND	20.
119-78-6	2-HEXANONE	ND	100.
75-09-2	METHYLENE CHLORIDE	ND	100.
108-10-1		ND	100.
100-42-5	•	ND	20.
	1,1,2,2-TETRACHLOROETHANE	ND	20.
127-18-4	TETRACHLOROETHYLENE	ND	20.
109-99-9	TETRAHYDROFURAN	ND	100.
108-88-3	TOLUENE	ND	20.
71-55-6	1,1,1-TRICHLOROETHANE	67.	20.
79-00-5	1,1,2-TRICHLOROETHANE	ND	20.
79-01-6	TRICHLOROETHYLENE	2400.	20.
75-69-4	TRICHLOROFLUOROMETHANE	ND	20.
108-05-4	VINYL ACETATE	ND	100.
		ND ND	100.
75-01-4	VINYL CHLORIDE		20.
95-47-6	TOTAL XYLENES	ND	20.

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-1S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-1S-1R

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V13
DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/21/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	ĩ.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	î.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE		
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4		ND	1.
108-05-4	TRICHLOROFLUOROMETHANE	ND	1.
·	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-1S-1R

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-2S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V1
DATE EXTRACTED: 07/20/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/20/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93 - 3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	5.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	
· · ·	AIDDADO	ND	1.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: WCC-2S-1A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-3S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V50
DATE EXTRACTED: 07/25/89 SAMPLE AMOUNT: 10UL
DATE ANALYZED: 07/25/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
			========
67-64-1	ACETONE	ND	3000.
71-43-2	BENZENE	ND	500.
75-27-4	BROMODICHLOROMETHANE	ND	500.
75-25-2	BROMOFORM	ND	500.
74-83-9	BROMOMETHANE	ND	3000.
78-93-3	2-BUTANONE (MEK)	ND	3000.
75-15-0	CARBON DISULFIDE	ND	500.
56-23-5	CARBON TETRACHLORIDE	ND	500.
108-90-7	CHLOROBENZENE	, ND	500.
75-00-3	CHLOROETHANE	ND	3000.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	5000.
67-66-3	CHLOROFORM	ND	500.
74-87-3	CHLOROMETHANE	ND	3000.
108-41-8	CHLOROTOLUENE	ND	500.
124-48-1	DIBROMOCHLOROMETHANE	ND	500.
95-50-1	1,2-DICHLOROBENZENE	ND	500.
541-73-1	1,3-DICHLOROBENZENE	ND	500.
106-46-7	1,4-DICHLOROBENZENE	ND	500.
75-34-3	1,1-DICHLOROETHANE	ND	500.
107-06-2	1,2-DICHLOROETHANE	ND	500.
75-35-4	1,1-DICHLOROETHYLENE	18000.	500.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	500.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	660.	500.
78-87-5	1,2-DICHLOROPROPANE	ND	500.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	500.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	500.
100-41-4	ETHYLBENZENE	ND	500.
106-93-4	ETHYLENE DIBROMIDE	ND	500.
76-13-1	FREON-TF	ND	500.
119-78-6	2-HEXANONE	ND	3000.
75-09-2	METHYLENE CHLORIDE	ND	3000.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	3000.
100-42-5	STYRENE	ND	500.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	500.
127-18-4	TETRACHLOROETHYLENE	ND	500.
109-99-9	TETRAHYDROFURAN	ND	3000.
108-88-3	TOLUENE	32000.	500.
71-55-6	1,1,1-TRICHLOROETHANE	56000.	500.
79-00-5	1,1,2-TRICHLOROETHANE	550.	500.
79-01-6	TRICHLOROETHYLENE	7700.	500.
75-69-4	TRICHLOROFLUOROMETHANE	ND	500.
108-05-4	VINYL ACETATE	ND	3000.
75-01-4	VINYL CHLORIDE	ND	3000.
95-47-6	TOTAL XYLENES	ND	500.
		ND	500.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: WCC-3S-1A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

SAMPLE: WCC-4S-1A CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13191

RUN NUMBER: 13191V60 DATE RECEIVED: 07/13/89 SAMPLE AMOUNT: 2ML DATE EXTRACTED: 07/25/89

MATRIX: WATER DATE ANALYZED: 07/25/89

UNITS: UG/L (PPB) VOLATILE ORGANICS (EPA 624/8240)

VOLATILE ORGANICS (EPA 624/8240)		UNITS: UG/L (PPB)	
CAS #	COMPOUND	CONCENTRATION	_
67-64-1	ACETONE	ND	20.
71-43-2	BENZENE	ND	3.
75-27-4	BROMODICHLOROMETHANE	ND	3.
75-25-2	BROMOFORM	ND	3.
74-83-9	BROMOMETHANE	ND	20.
78-93-3	2-BUTANONE (MEK)	ND	20.
75-15-0	CARBON DISULFIDE	ND	3.
56-23-5	CARBON TETRACHLORIDE	ND	3.
108-90-7	CHLOROBENZENE	ND	3.
75-00-3	CHLOROETHANE	ND	20.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	30.
67-66-3	CHLOROFORM	ND	3.
74-87-3	CHLOROMETHANE	ND	20.
108-41-8	CHLOROTOLUENE	ND	3.
124-48-1	DIBROMOCHLOROMETHANE	ND	3.
95-50-1	1,2-DICHLOROBENZENE	ND	3.
541-73-1	1,3-DICHLOROBENZENE	ND	3.
106-46-7	1,4-DICHLOROBENZENE	ND	3.
75-34-3	1,1-DICHLOROETHANE	ND	3.
107-06-2	1,2-DICHLOROETHANE	ND	3.
75-35-4	1,1-DICHLOROETHYLENE	170.	3.
156-59-4	CIS-1,2-DICHLOROETHYLENE	10.	3.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	3.
78-87-5	1,2-DICHLOROPROPANE	ND	3.
	CIS-1,3-DICHLOROPROPENE	ND	3.
10061-02-6	•	ND	3.
100-41-4	ETHYLBENZENE	ND	3.
106-93-4	ETHYLENE DIBROMIDE	ND	3.
	FREON-TF	ND	3.
119-78-6	2-HEXANONE	ND	20.
	METHYLENE CHLORIDE	ND	20.
	4-METHYL-2-PENTANONE (MIBK)	ND	20.
	STYRENE	ND	3.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	3.
127-18-4	TETRACHLOROETHYLENE	ND	3.
109-99-9	TETRAHYDROFURAN	ND	20.
108-88-3	TOLUENE	ND	3.
71-55-6	1,1,1-TRICHLOROETHANE	11.	3.
79-00-5	1,1,2-TRICHLOROETHANE	ND	3.
79-01-6	TRICHLOROETHYLENE	270.	3.
75-69-4	TRICHLOROFLUOROMETHANE	ND	3.
108-05-4	VINYL ACETATE	ND	20.
75-01-4	VINYL CHLORIDE	ND	20.
95-47-6	TOTAL XYLENES	ND	3.

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-4S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-5S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V51
DATE EXTRACTED: 07/25/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/25/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
========			========
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	- -
108-90-7	CHLOROBENZENE		1.
75-00-3	CHLOROETHANE	ND	1.
110-75-8		ND	5.
67-66-3	2-CHLOROETHYLVINYLETHER	ND	10.
74-87-3	CHLOROFORM	ND	<u>1</u> .
	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	3.	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	6.	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	ī.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	i.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE		5.
75-09-2	METHYLENE CHLORIDE	ND	
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	5.
79-34-5		ND	1.
	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	13.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
	·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·- ·	ND	⊥.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: WCC-5S-1A

UNITS: UG/L (PPB)

APPROXIMATE FRACTION CONCENTRATION

COMPOUND NAME

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-5S-1B

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V52
DATE EXTRACTED: 07/25/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/25/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
E ==========			========
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDÉ	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE		
156-59-4		3.	1.
	CIS-1,2-DICHLOROETHYLENE	6.	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	ī.
79-01-6	TRICHLOROETHYLENE	12.	1.
75-69-4	TRICHLOROFLUOROMETHANE		
108-05-4		ND	1.
75-01-4	VINYL ACETATE	ND	5.
	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-5S-1B

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-7S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 DATE EXTRACTED: 07/25/89 RUN NUMBER: 13191V61 SAMPLE AMOUNT: 500UL DATE ANALYZED: 07/25/89 MATRIX:

"			
CAS #	COMPOUND	CONCENTRATION	DET LIMIT
========			=========
67-64-1	ACEMONE		
71-43-2	ACETONE	ND	50.
75-27-4	BENZENE	ND	10.
	BROMODICHLOROMETHANE	ND	10.
75-25-2	BROMOFORM	ND	10.
74-83-9	BROMOMETHANE	ND	50.
78-93-3	2-BUTANONE (MEK)	ND	50.
75-15-0	CARBON DISULFIDE	ND	10.
56-23-5	CARBON TETRACHLORIDE	ND	10.
108-90-7	CHLOROBENZENE	ND	10.
75-00-3	CHLOROETHANE	ND	50.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	100.
67-66-3	CHLOROFORM	ND	10.
74-87-3	CHLOROMETHANE	ND	
108-41-8	CHLOROTOLUENE		50.
124-48-1	DIBROMOCHLOROMETHANE	ND	10.
95-50-1	1,2-DICHLOROBENZENE	ND	10.
541-73-1	1,3-DICHLOROBENZENE	ND	10.
106-46-7	1,4-DICHLOROBENZENE	ND	10.
75-34-3	1,1-DICHLOROETHANE	ND	10.
107-06-2	1,2-DICHLOROETHANE	ND	10.
75-35-4	1,1-DICHLOROETHYLENE	ND	10.
156-59-4	CIS-1,2-DICHLOROETHYLENE	850.	10.
156-60-5	-/	26.	10.
78-87-5	TRANS-1,2-DICHLOROETHYLENE 1,2-DICHLOROPROPANE	11.	10.
10061-01-5	CTS-1 3-DICULODODDODDOD	ND	10.
10061-02-6	,	ND	10.
100-41-4	TRANS-1,3-DICHLOROPROPENE	ND	10.
106-93-4	ETHYLBENZENE	ND	10.
76-13-1	ETHYLENE DIBROMIDE	ND	10.
	FREON-TF	ND	10.
119-78-6	2-HEXANONE	ND	50.
75-09-2	METHYLENE CHLORIDE	ND	50.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	50.
100-42-5	STYRENE	ND	10.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	10.
127-18-4	TETRACHLOROETHYLENE	ND	10.
109-99-9	TETRAHYDROFURAN	ND	
108-88-3	TOLUENE		50.
71-55-6	1,1,1-TRICHLOROETHANE	ND	10.
79-00-5	1,1,2-TRICHLOROETHANE	110.	10.
79-01-6	TRICHLOROETHYLENE	ND	10.
75-69-4	TRICHLOROFLUOROMETHANE	1300.	10.
108-05-4	VINYL ACETATE	ND	10.
75-01-4		ND	50.
95-47-6	VINYL CHLORIDE	ND	50.
-3 4/ 0	TOTAL XYLENES	ND	10.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: WCC-7S-1A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-8S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V58
DATE EXTRACTED: 07/25/89 SAMPLE AMOUNT: 1ML
DATE ANALYZED: 07/25/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
========		=======================================	=========
67-64-1	ACEMONE	MD	2.0
67-64-1 71-43-2	ACETONE BENZENE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5. 5.
75-25-2	BROMOFORM	ND	
74-83-9	BROMOFORM BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND ND	30.
75-15-0	CARBON DISULFIDE	ND	30. 5.
56-23-5	CARBON TETRACHLORIDE	ND ND	5. 5.
108-90-7	CHLOROBENZENE	ND ND	5. 5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	50.
67-66-3	CHLOROFORM	ND	5.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,2-DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	430.	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	7.	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	, . 9 .	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	30.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	30.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	160.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	240.	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINIL RELIGIE VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES		
33-47 - 0	TOTAL VIPENCS	ND	5.

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-8S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-8S-1R

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V54
DATE EXTRACTED: 07/25/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/25/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
		=======================================	:============
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
		ND	1.
95-50-1	1,2-DICHLOROBENZENE		1.
541-73-1	1,3-DICHLOROBENZENE	ND	
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5		ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4		ND	5.
	VINYL CHICKLE	ND	5.
75-01-4	VINYL CHLORIDE		
95-47-6	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: WCC-8S-1R

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-10S-1A

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13193V4
DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/21/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	i.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOFORM	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	3.	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLORGMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	ī.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	2.	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	ī.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-00-5	TRICHLOROETHYLENE	86.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

CLIENT:

WOODWARD-CLYDE

SAMPLE: WCC-10S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-10S-1B

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V5
DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/21/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	3.	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	ī.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	ī.
75-35-4	1,1-DICHLOROETHYLENE	1.	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	î.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	87.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINIL ACEIATE VINYL CHLORIDE		
95-47-6		ND	5.
33-47-0	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13191

SAMPLE: WCC-10S-1B

VOA

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

1 NONE FOUND

FRACTION CONCENTRATION

CLIENT: WOODWARD-CLYDE SAMPLE: WCC-10S-1R

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89 RUN NUMBER: 13191V6
DATE EXTRACTED: 07/21/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 07/21/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8		ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINTE ACCITATE VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
JJ- 47-0	TOTAL VIRENTA	ND	4 •

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-10S-1R

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME ______

VOA

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13191

DATE RECEIVED: 07/13/89
DATE EXTRACTED: 07/25/89

DATE ANALYZED: 07/26/89

SAMPLE: WCC-11S-1A

RUN NUMBER: 13191V63

SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORG	ANICS (EPA 624/8240)	UNITS: UG/L (PPB)	
CAS #	COMPOUND	CONCENTRATION	
========			
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ИД	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHAN®	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	מא	1. 1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	1.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE		1.
127-18-4	TETRACHLOROETHYLENE	ND ND	5.
109-99-9	TETRAHYDROFURAN	ND	1.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE		1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	1.
95-47-6	TOTAL XYLENES	ND	

CLIENT: WOODWARD-CLYDE

SAMPLE: WCC-11S-1A

WCAS JOB #: 13191

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

VOA 1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

131/11/20

Woodward-(Ctyde	Consultants
	,	



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 6

PAGE_/_OF_Z

PROJECT NAME: Daylas Arrafi Co./C6

DATE 7 /12/ 89

	PROJEC	31 NO.:		10023 1236			
Sample Number	Location	Type of	Sample	Type of Container		of Preservation	→ Analysis Required *
Sumple Hamber		Material	Method		Temp	Chemical	
WCC-15-1A	WC-15	WATER	BAILEIR	40 MR UDA	165	NONE	CUNTACT:
wcc-15-18		ı	1	<u> </u>			ALSTEIR CAROL
WCC-15-10				40 Prasc			(714) 335-620
wcc-15-1R	T			40 place VOA			
					17		
WCC-25-14			 		1 1		
WCC-25-18				4 - 3650	 		
UCC-25-19		 	 	4 02. 765 40 2 VOA	+ +	 	
MC-25-1R	L V		 	40 ~ VOA	+		-
WCC -35-1A	MCC-32			4			
WCC-35-1B		L L		V	 	 	
wcc-35-10				4 02. 4/ass			
WKC-35-1R				4 02. 9/55 40 18 VUA	11		
WCC-45-1A	1116						
			<u> </u>	1			
WC-45-1B		 		1 - 21.00	1 1		
WCC-451C				9 oz. glass	+		
WCC-45-1R	Y	 - 		40 re 100	++		
WC-55-1A	MCK-55		 		+-+	 	
WCC-55-18				Y		 	
ucc - 55 - 10				4 02. glass	1	 	
WCC-55-1R	$\prod V$	V	V	40 L VOA		0	
Total Number of	Samples Sh	ipped: 35	Sample	r's Śignature:	1/10	Man	
Relinquished By:	01 9	Way.		Received By:	7.) -,	10%	Date
Signature	1000/1			Signature	Kure	Kouler	
Printed Name	121	T Glass	MA	Printed Name	DAVII	Razicki A-1	Time
Company	الم الم		MCAC	Company		<u> </u>	9.09
Reason	_acary		WVIS	Garatina di Brita	- Ger	¬ / /	Date
Relinquished By:) Selin	97.60		Received By: Signature	milk	i chards	7/13/
Signature Printed Name	D. Rouis	KI		Printed Name	AP	PIL KICHAR	ZUS Time
Company	<i>F</i> -/			Company	NA	b 131	
Reason	DELIVE	(RF)		\	10010	, WIJ1	
Relinquished By:				Received By:			Date
Signature							
Printed Name							Time
Company			J	Company			
Reason				Received By:			Date
Relinquished By:							1 , ,
Signature Printed Name							
Company				1			1 ::::::
Reason				ļ			<u> </u>

* Note - This does not constitute authorization to proceed with analysis

LA, OR -0183

	•	Woo	dward-	Clyde Consulta	ants 🖥		ENT NO.:	
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	PROJEC	T NO:	\$7418	363) - TUSK	1			
<u> </u>			Sample	Type of Container	Type o	f Preservation	Analysi	s Required
Sample Number	Location	Material	Method		Temp	Chemical AFILE	CUM	YT:
ICC - 75-1A	MCC-13	Work	BAILLE	40 me VOA	110	1		ine Casor
NCC-75-18			1-1-	4 oz gles			(7.4)	335-1880
WCC-75-12	V			4 oz gless	1-1-1-			
WCC-85-1A	いくら		 		+			
wcc-35-1B			 	duz glass	+++			
WCC-85-10 WCC-85-18				40 me UDA				
JCC - 105 - 1 A							-	
UCC-105-13				V Tare				
NCC-105-1C				407. 9655				
NCC-105-12 NCC-115-1A		 						
WCC-115-1B				y				
wc-115-1c				40 me VOX				
wcc-11s-1R	V.		775	40 M VOS				
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D. I - B	100				*	*		
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Signature	D. OROZ	icki		Printed Name Company	<u> </u>		<u>ی</u>	Time
Company	DELIVE	RED		Company	~~~~	h1319	1	<u> </u>
Relinquished By:				Received By:				_ Date _ /
Signature Printed Name				Printed Name				Time
Company				Company				
Reason Relinquished By:				Received By:				Date
Signature								_
Printed Name								Time
Reason								
Special Shipment	/ Handling	g / Storage	Requireme	ints:				

August 9, 1989

RECEIVED

WCC-SANTA ANA



WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

13290

A

LABORATORY REPORT

Samples Received: Twelve (12) waters

Date Received: 7-26-89

Date Released for Analysis: 8-7-89

Purchase Order No: Proj#: 8941863J/Task 1-Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Two (2) waters

Volatile Organics

by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton Senior Chemist D.J. Northington, Ph.D. Technical Director

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-1D-1A

WCAS JOB #: 13290

DATE RECEIVED: 07/26/89 RUN NUMBER: 13290V1
DATE EXTRACTED: 08/08/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 08/08/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75 - 25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0		ND	1.
56-23-5		ND	1.
108-90-7		ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	5.	5.
108-88-3	TOLUENE	1.	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	2.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4			
95-47-6	VINYL CHLORIDE	ND	5.
73-4/-0	TOTAL XYLENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS WCAS JOB #: 13290

SAMPLE: WCC-1D-1A

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3D-1A

WCAS JOB #: 13290

95-47-6 TOTAL XYLENES

DATE RECEIVED: 07/26/89 RUN NUMBER: 13290V2
DATE EXTRACTED: 08/08/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 08/08/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78 - 93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1		ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ИD	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	11.	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	3.	1.
71-55-6	1,1,1-TRICHLOROETHANE	49.	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-00-3 79-01-6	TRICHLOROETHYLENE	4.	1.
75-69-4	TRICHLOROETHILENE		1.
108-05-4		ND	
	VINYL ACETATE	ND	5.
75-01-4 05-47-6	VINYL CHLORIDE	ND	5.

ND 1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-3D-1A

WCAS JOB #: 13290

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

PROJECT NAME: 29418		T Co.		OF
PROJECT NO.: 8948 Imple Number Location Type of Sample Material Method	63 J - Tas	Type of Temp	Preservation Chemical	,
PROJECT NO.: 8948 Imple Number Location Type of Sample Material Method	63 J - Tas	Type of Temp	Preservation Chemical	Analysis Required
Imple Number Location Type of Sample Material Method C-12-14 LCC-12 LSEC CALE CC-12-13 LSEC CALE CC-12-13 LSEC CALE CC-32-13 LSEC CC-32-14 LSEC CC-32-15	Type of Container	Type of Temp	Chemical	Analysis Required
Material Method Material Method C- D- A		Temp	Chemical	Analysis Required
CC-1D-13 CC-1D-12 CC-1D-15 CC-3D-1A WCC-3D CC-3D-18 CC-3D-18 CC-3D-18 CC-12D-18 CC-12D-18 CC-12D-18	40 xk VOA		NUE	
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CC-120-18 CC-30-14 WCC-30 CC-30-18 CC-30-18 CC-120-18 CC-120-18 CC-120-18				
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CONTACT: Alistine Calbrian	or Peter (shes.non	714 83	75 688C

LA, OR -0183-421

September 8, 1989

WEST COAST ANALYTICAL SERVICE, INC.

ANALYTICAL CHEMISTS

Α

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Peter Glaesman

JOB NO.

13533

LABORATORY REPORT

Samples Received: Fifty-five (55) liquids

Date Received: 8-24-89

Purchase Order No: Proj#: 8941863J Task 1/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Thirteen (13)

Volatile Organics

liquids by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton

Senior Chemist

B. Michael Hovanec Senior Staff Chemist CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-1D-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V16
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 09/06/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5:
78-93 -3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23 -5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00 - 3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4		ND	ī.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	ī.
78-87 - 5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2		ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71 - 55 -6	1,1,1-TRICHLOROETHANE	1.	1.
79-00 - 5	1,1,2-TRICHLOROETHANE	ND	1.
79-01 - 6	TRICHLOROETHYLENE	2.	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.
		2	***

i,

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-1D-2A

WCAS JOB #: 13533

VOA

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

. . . .

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-1S-2A

WCAS JOB #: 13533

.

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V17
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 150UL
DATE ANALYZED: 09/06/89 MATRIX: WATER

		*	
CAS #	COMPOUND	CONCENTRATION	DET LIMIT
=========	=======================================	======================================	========
67-64-1	ACETONE	ND	200.
71-43-2	BENZENE	ND	30.
75-27 -4	BROMODICHLOROMETHANE	ND	30.
75-25 - 2	BROMOFORM	ND	30.
74-83-9	BROMOMETHANE	ND	200.
78-93-3	2-BUTANONE (MEK)	ND	200.
75-15-0	CARBON DISULFIDE	ND	30.
56-23-5	CARBON TETRACHLORIDE	ND	30.
108-90-7		ND	30.
75-00-3		ND	200.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	300.
67-66-3	CHLOROFORM	ND	30.
74-87-3	CHLOROMETHANE	ND	200.
108-41-8	CHLOROTOLUENE	ND	30.
124-48-1	DIBROMOCHLOROMETHANE	ND	30.
95-50-1	1,2-DICHLOROBENZENE	ND	30.
541-73-1	1,3-DICHLOROBENZENE	ND	30.
106-46-7	1,4-DICHLOROBENZENE	ND	30.
75-34-3	1,1-DICHLOROETHANE	ND	
107-06-2	1,2-DICHLOROETHANE	ND	30.
75-35-4	1,1-DICHLOROETHYLENE	1500.	30.
156-59-4	CIS-1,2-DICHLOROETHYLENE	41.	30.
156-60-5	TRANS-1,2-DICHLOROETHYLENE		30.
78-87-5	1,2-DICHLOROPROPANE	ND	30.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	30.
10061-02-6	= /	ND	30.
100-41-4		ND	30.
106-93-4		ND	30.
76-13-1	FREON-TF	ND	30.
119-78-6	2-HEXANONE	ND	30.
75-09-2		ND	200.
108-10-1		ND	200.
100-42-5	4-METHYL-2-PENTANONE (MIBK) STYRENE	ND	200.
79-34-5		ND	30.
127-18-4	1,1,2,2-TETRACHLOROETHANE	ND	30.
109-99-9	TETRACHLOROETHYLENE	ND	30.
· -	TETRAHYDROFURAN	ND	200.
108-88-3	TOLUENE	ND	30.
71-55-6	1,1,1-TRICHLOROETHANE	ND	30.
79-00-5	1,1,2-TRICHLOROETHANE	ND	30.
79-01-6	TRICHLOROETHYLENE	2800.	30.
75-69-4	TRICHLOROFLUOROMETHANE	ND	30.
108-05-4	VINYL ACETATE	ND	200.
75-01-4	VINYL CHLORIDE	ND	200.
95-47-6	TOTAL XYLENES	ND	30.
		14.0	٥0.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-1S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

ŧ,

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-2S-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V18 DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5ML DATE ANALYZED: 09/06/89 MATRIX: WATER

C) C "				
CAS # ========	COMPOUND	CONCENTRATION		
67-64-1	ACETONE	=========== ND		
71-43-2	BENZENE	ND	5.	
75-27-4	BROMODICHLOROMETHANE	ND	1.	
75-25-2	BROMOFORM	ND	1.	
74-83-9	BROMOMETHANE	ND	1.	
78-93 -3	2-BUTANONE (MEK)	ND	5.	
75-15-0	CARBON DISULFIDE	ND	5.	
56-23-5	CARBON TETRACHLORIDE		1.	
108-90-7	CHLOROBENZENE	ND	1.	
75-00-3	CHLOROETHANE	ND	1.	
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.	
67-66-3	CHLOROFORM	ND	10.	
74-87-3	CHLOROMETHANE	ND	1.	
108-41-8	CHLOROTOLUENE	ND	5.	
124-48-1	DIBROMOCHLOROMETHANE	ND	1.	
95-50-1	1,2-DICHLOROBENZENE	ND	1.	
541-73-1	1,3-DICHLOROBENZENE	ND	1.	
106-46-7	1,4-DICHLOROBENZENE	ND	1.	
75-34-3	1,1-DICHLOROETHANE	ND	1.	
107-06-2	1,2-DICHLOROETHANE	ND	1.	
75-35-4	1,1-DICHLOROETHYLENE	ND	1.	
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.	
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.	
78-87-5	1,2-DICHLOROPROPANE	ND	1.	
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.	
10061-02-6	-/	ND	1.	
100-41-4	TRANS-1,3-DICHLOROPROPENE ETHYLBENZENE	ND	1.	
106-93-4		ND	1.	
76-13-1	ETHYLENE DIBROMIDE FREON-TF	ND	1.	
119-78-6		ND	1.	
75-09-2	2-HEXANONE	ND	5.	
108-10-1	METHYLENE CHLORIDE	ND	5.	
100-42-5	4-METHYL-2-PENTANONE (MIBK)	ND	5.	
79-34-5	STYRENE	ND	1.	
127-18-4	1,1,2,2-TETRACHLOROETHANE	ND	1.	
	TETRACHLOROETHYLENE	ND	1.	
109-99-9	TETRAHYDROFURAN	ND	5.	
108-88-3	TOLUENE	ND	1.	
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.	
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.	
79-01-6	TRICHLOROETHYLENE	3.	1.	
75-69-4	TRICHLOROFLUOROMETHANE	ND		
108-05-4	VINYL ACETATE	ND ND	1.	
75-01-4	VINYL CHLORIDE		5.	
95-47-6	TOTAL XYLENES	ND	5.	
		ND	1.	

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-2S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3D-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 DATE EXTRACTED: 09/06/89 RUN NUMBER: 13533V19 SAMPLE AMOUNT: 500UL DATE ANALYZED: 09/06/89 MATRIX: WATER

	(= = = , = = : = ,	ONITS: UG/L (PPB)			
CAS # ========	COMPOUND	CONCENTRATION	DET LIMIT		
07-04-1	ACETONE	ND	50.		
71-43-2	BENZENE	ND	10.		
75-27-4	BROMODICHLOROMETHANE	ND	10.		
75-25-2	BROMOFORM	ND	10.		
74-83-9	BROMOMETHANE	ND	50.		
78-93-3	2-BUTANONE (MEK)	ND	50.		
75-15-0	CARBON DISULFIDE	ND	10.		
56-23 - 5	CARBON TETRACHLORIDE	ND	10.		
108-90-7	CHLOROBENZENE	ND	10.		
75-00-3	CHLOROETHANE	ND	50.		
110-75-8	2-CHLOROETHYLVINYL ETHER	ND			
67-66-3	CHLOROFORM	ND	100.		
74-87-3	CHLOROMETHANE	ND	10.		
108-41-8	CHLOROTOLUENE	ND	50.		
124-48-1	DIBROMOCHLOROMETHANE	ND	10.		
95-50-1	1,2-DICHLOROBENZENE	ND	10.		
541-73-1	1,3-DICHLOROBENZENE		10.		
106-46-7	1,4-DICHLOROBENZENE	ND	10.		
75-34-3	1,1-DICHLOROETHANE	ND	10.		
107-06-2	1,2-DICHLOROETHANE	ND	10.		
75-35-4	1,1-DICHLOROETHYLENE	ND	10.		
156-59-4	CIS-1, 2-DICHLOROETHYLENE	ND	10.		
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	10.		
78-87-5	1,2-DICHLOROPROPANE	ND	10.		
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	10.		
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	10.		
2-41-4	ETHYLBENZENE	ND	10.		
-93-4	ETHYLENE DIBROMIDE	ND	10.		
13-1	FREON-TF	ND	10.		
1_9-78-6	2-HEXANONE	ND	10.		
75-09-2	METHYLENE CHLORIDE	ND	50.		
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	50.		
100-42-5	STYRENE	ND	50.		
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	10.		
127-18-4	TETRACHLOROETHANE TETRACHLOROETHYLENE	ND	10.		
109-99-9	TETRACIDOROETHYLENE	ND	10.		
108-88-3	TOLUENE	ND	50.		
71-55-6		ND	10.		
79-00-5	1,1,1-TRICHLOROETHANE	32.	10.		
79-00-5	1,1,2-TRICHLOROETHANE	ND	10.		
75-69-4	TRICHLOROETHYLENE	ND	10.		
	TRICHLOROFLUOROMETHANE	ND	10.		
108-05-4	VINYL ACETATE	ND	50.		
75-01-4	VINYL CHLORIDE	ND	50.		
95-47-6	TOTAL XYLENES	ND	10.		

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CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3D-2A

WCAS JOB #: 13533

COMPOUND NAME

UNITS: UG/L (PPB)

APPROXIMATE

FRACTION CONCENTRATION

1 NONE FOUND

VOA

BOE-C6-0014804

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3S-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V20
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5UL
DATE ANALYZED: 09/06/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	5000.
71-43-2	BENZENE	ND	1000.
75-27-4	BROMODICHLOROMETHANE	ND	1000.
75-25 -2	BROMOFORM	ND	1000.
74-83-9	BROMOMETHANE	ND	5000.
78-93 -3	2-BUTANONE (MEK)	ND	5000.
75-15-0	CARBON DISULFIDE	ND	1000.
56-23-5	CARBON TETRACHLORIDE	ИД	1000.
108-90-7	CHLOROBENZENE	ND	1000.
75-00-3	CHLOROETHANE	ND	5000.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10000.
67-66-3	CHLOROFORM	ND	1000.
74-87-3	CHLOROMETHANE	ND	5000.
108-41-8	CHLOROTOLUENE	ND	1000.
124-48-1	DIBROMOCHLOROMETHANE	ND	1000.
95-50-1	1,2-DICHLOROBENZENE	ND	1000.
541-73-1	1,3-DICHLOROBENZENE	ND	1000.
106-46-7	1,4-DICHLOROBENZENE	ND	1000.
75-34-3	1,1-DICHLOROETHANE	ND	1000.
107-06-2	1,2-DICHLOROETHANE	ND	1000.
75-35-4	1,1-DICHLOROETHYLENE	56000.	1000.
156 -59-4	CIS-1,2-DICHLOROETHYLENE	ND	1000.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1000.
78-87 -5	1,2-DICHLOROPROPANE	ND	1000.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1000.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1000.
100-41-4	ETHYLBENZENE	ND	1000.
106-93-4	ETHYLENE DIBROMIDE	ND	1000.
76-13-1	FREON-TF	ND	1000.
119-78-6	2-HEXANONE	ND	5000.
75-09 -2	METHYLENE CHLORIDE	ND	5000.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5000.
100-42-5	STYRENE	ND	1000.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1000.
127-18-4	TETRACHLOROETHYLENE	ND	1000.
109-99-9	TETRAHYDROFURAN	ND	5000.
108-88-3	TOLUENE	56000.	1000.
71-55-6	1,1,1-TRICHLOROETHANE	78000.	1000.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1000.
79-01-6	TRICHLOROETHYLENE	6000.	1000.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1000.
108-05-4	VINYL ACETATE	ND	5000.
75-01-4	VINYL CHLORIDE	ND	5000.
95-47-6	TOTAL XYLENES	ND	1000.
-		ND	1000.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

í.

1 UNIDENTIFIED COMPOUND

VOA 10000.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-3S-2R

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V21
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 09/06/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23 - 5	CARBON TETRACHLORIDE	ND	î.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	ī.
95-50-1	1,2-DICHLOROBENZENE	ND	i.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	ī.
78-87-5	1,2-DICHLOROPROPANE	ND	ī.
10061-01-5		ND	i.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.
100-41-4	ETHYLBENZENE	ND	ī.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	
		ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-3S-2R

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-4S-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V22
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 1ML
DATE ANALYZED: 09/06/89 MATRIX: WATER

		5.115. 6G/ E (11B)	
CAS #	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	=========== ND	30.
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	5.
75-25-2	BROMOFORM	ND	5.
74-83-9	BROMOMETHANE	ND	30.
78-93-3	2-BUTANONE (MEK)	ND	30.
75-15-0	CARBON DISULFIDÉ	ND	5.
56-23-5	CARBON TETRACHLORIDE	ND	5.
108-90-7	CHLOROBENZENE	ND	5.
75-00-3	CHLOROETHANE	ND	30.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
67-66-3	CHLOROFORM	ND	5·.
74-87-3	CHLOROMETHANE	ND	30.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	
95-50-1	1,2-DICHLOROBENZENE	ND	5.
541-73-1	1,3-DICHLOROBENZENE		5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
107-06-2	1,1 DICHLOROETHANE	ND	5.
75-35-4	1,1-DICHLOROETHYLENE	ND	5.
156-59-4	CIS-1,2-DICHLOROETHYLENE	360.	5.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	15.	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
10061-02-6		ND	5.
10001-02-8		ND	5.
106-93-4	ETHYLBENZENE ETHYLENE DIDDOWLDD	ND	5.
76-13-1	ETHYLENE DIBROMIDE	ND	5.
	FREON-TF	ND	5.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	30.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.
100-42-5	STYRENE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
127-18-4	TETRACHLOROETHYLENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	30.
108-88-3	TOLUENE	ND	5.
71-55-6	1,1,1-TRICHLOROETHANE	7.	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
79-01-6	TRICHLOROETHYLENE	410.	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
95-47-6	TOTAL XYLENES	ND	5.
		110	J.

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-4S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 UNIDENTIFIED COMPOUND

VOA 300.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-5S-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V29
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 09/06/89 MATRIX: WATER

CAS #	COMPOUND		
		CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLORGETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	4.	1.
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND ND	1.
100-41-4	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-3-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	
109-99-9	TETRAHYDROFURAN	ND	1.
108-88-3	TOLUENE		5.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE	ND	1.
75-69-4		12.	1.
108-05-4	TRICHLOROFLUOROMETHANE	ND	1.
75-01-4	VINYL ACETATE	ND	5.
	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	1.

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CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-5S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-5S-2R

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89

DATE EXTRACTED: 09/06/89

DATE ANALYZED: 09/06/89

RUN NUMBER: 13533V24

SAMPLE AMOUNT: 5ML
WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	5.
71-43-2	BENZENE	ND	1.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	5.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0		ND	1.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
67-66-3	CHLOROFORM	ND	1.
74-87-3	CHLOROMETHANE	ND	5.
108-41-8	CHLOROTOLUENE	ND	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	ND	1.
75-35-4	1,1-DICHLOROETHYLENE	ND	1.
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.
156-60-5		ND	1.
78-87 - 5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	i.
10061-02-6		ND	1.
100-41-4	ETHYLBENZENE	ND	i.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	ND	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	1.
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01 - 6	TRICHLOROETHYLENE	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
108-05-4	VINYL ACETATE	ND	5.
75-01-4	VINYL CHLORIDE	ND	5. 5.
95-47-6	TOTAL XYLENES	ND	
	IVIII III IIIIII	ND	1.

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CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-5S-2R

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-7S-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V25
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 200UL
DATE ANALYZED: 09/06/89 MATRIX: WATER

CAS #	COMPOUND	CONCENTRATION	
67-64-1	ACETONE	ND	100.
71-43-2	BENZENE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	30.
75-25 -2	BROMOFORM	ND	30.
74-83-9	BROMOMETHANE	ND	100.
78-93 - 3	2-BUTANONE (MEK)	ND	100.
75-15-0	CARBON DISULFIDE	ND	30.
56-23 - 5	CARBON TETRACHLORIDE	ND	30.
108-90-7	CHLOROBENZENE	ND	30.
75-00-3	CHLOROETHANE	ND	100.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	300.
67-66-3	CHLOROFORM	ND	30.
74-87-3	CHLOROMETHANE	ND	100.
108-41-8	CHLOROTOLUENE	ND	30.
124-48-1	DIBROMOCHLOROMETHANE	ND	30.
95-50-1	1,2-DICHLOROBENZENE	ND	30.
541-73-1	1,3-DICHLOROBENZENE	ND	30.
106-46-7	1,4-DICHLOROBENZENE	ND	
75-34-3		ND	30.
107-06-2	1,2-DICHLOROETHANE	ND	30.
75-35-4	1,1-DICHLOROETHYLENE	1100.	30.
156-59-4	CIS-1,2-DICHLOROETHYLENE	31.	30.
156-60-5	TRANS-1,2-DICHLOROETHYLENE		30.
78-87-5	1,2-DICHLOROPROPANE	ND	30.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	30.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	30.
100-41-4	ETHYLBENZENE	ND	30.
106-93-4	ETHYLENE DIBROMIDE	ND	30.
76-13-1	FREON-TF	ND	30.
119-78-6	2-HEXANONE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	100.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	100.
100-42-5	STYRENE (MIBK)	ND	100.
79-34-5		ND	30.
127-18-4	1,1,2,2-TETRACHLOROETHANE	ND	30.
109-99-9	TETRACHLOROETHYLENE	ND	30.
	TETRAHYDROFURAN	ND	100.
108-88-3 71-55-6	TOLUENE	ND	30.
	1,1,1-TRICHLOROETHANE	66.	30.
79-00-5	1,1,2-TRICHLOROETHANE	ND	30.
79-01-6	TRICHLOROETHYLENE	1400.	30.
75-69-4	TRICHLOROFLUOROMETHANE	ND	30.
108-05-4	VINYL ACETATE	ND	100.
75-01-4	VINYL CHLORIDE	ND	100.
95-47-6	TOTAL XYLENES	ND	30.

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CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-7S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-85-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V26
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 1ML
DATE ANALYZED: 09/06/89 MATRIX: WATER

CAS # =========	COMPOUND	CONCENTRATION		
67-64-1	ACETONE	===================== ND	30.	
71-43-2	BENZENE	ND	5.	
75-27-4	BROMODICHLOROMETHANE	ND	5.	
75-25-2	BROMOFORM	ND	5.	
74-83-9	BROMOMETHANE	ND	30.	
78-93-3	2-BUTANONE (MEK)	ND	30.	
75-15-0	CARBON DISULFIDÉ	ND	5.	
56-23 - 5	CARBON TETRACHLORIDE	ND	5.	
108-90-7	CHLOROBENZENE	ND	5.	
75-00-3	CHLOROETHANE	ND	30.	
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.	
67-66-3	CHLOROFORM	ND	5.	
74-87-3	CHLOROMETHANE	ND	30.	
108-41-8	CHLOROTOLUENE	ND	5.	
124-48-1	DIBROMOCHLOROMETHANE	ND	5. 5.	
95-50-1	1,2-DICHLOROBENZENE	ND	5. 5.	
541-73 - 1	1,3-DICHLOROBENZENE	ND	5.	
106-46-7	1,4-DICHLOROBENZENE	ND	5.	
75-34-3	1,1-DICHLOROETHANE	ND		
107-06-2	1,2-DICHLOROETHANE	ND ND	5.	
75-35-4	1,1-DICHLOROETHYLENE		5.	
156-59-4	CIS-1,2-DICHLOROETHYLENE	820.	5.	
156-60-5	TRANS-1,2-DICHLOROETHYLENE	7.	5.	
78-87-5	1,2-DICHLOROPROPANE	ND	5.	
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.	
100-41-4	ETHYLBENZENE	ND	5.	
106-93-4	ETHYLENE DIBROMIDE	ND	5.	
76-13-1	FREON-TF	ND	5.	
119-78-6	2-HEXANONE	ND	5.	
75-09-2	METHYLENE CHLORIDE	ND	30.	
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	30.	
100-42-5	STYRENE	ND	30.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.	
127-18-4	TETRACHLOROETHYLENE	ND	5.	
109-99-9	TETRAHYDROFURAN	ND	5.	
108-88-3		ND	30.	
71-55-6	TOLUENE	ND	5.	
79-00-5	1,1,1-TRICHLOROETHANE	130.	5.	
79-00 - 5	1,1,2-TRICHLOROETHANE	ND	5.	
	TRICHLOROETHYLENE	430.	5.	
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.	
108-05-4	VINYL ACETATE	ND	30.	
75-01-4	VINYL CHLORIDE	ND	30.	
95-47-6	TOTAL XYLENES	ND	5.	

CLIENT: WOODWARD-CLYDE CONSULTANTS

SAMPLE: WCC-8S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-10S-2A

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V27 DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5ML DATE ANALYZED: 09/06/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

CAS # ========	COMPOUND	CONCENTRATION	DET LIMIT	
67-64-1	ACETONE	ND	5.	
71-43-2	BENZENE	ND		
75-27-4	BROMODICHLOROMETHANE	ND	1.	
75-25-2	BROMOFORM	ND	1.	
74-83-9	BROMOMETHANE	ND	1.	
78-93-3	2-BUTANONE (MEK)		5.	
75-15-0	CARBON DISULFIDE	ND	5.	
56-23-5	CARBON TETRACHLORIDE	ND	1.	
108-90-7	CHLOROBENZENE	ND	1.	
75-00-3	CHLOROETHANE	ND	1.	
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.	
67-66-3		ND	10.	
74-87-3	CHLOROFORM	4.	1.	
108-41-8	CHLOROMETHANE	ND	5.	
124-48-1		ND	1.	
	DIBROMOCHLOROMETHANE	ND	1.	
95-50-1	1,2-DICHLOROBENZENE	ND	1.	
541-73-1	1,3-DICHLOROBENZENE	ND	1.	
106-46-7	1,4-DICHLOROBENZENE	ND	ī.	
75-34-3	1,1-DICHLOROETHANE	ND	1.	
107-06-2	1,2-DICHLOROETHANE	ND	1.	
75-35-4	1,1-DICHLOROETHYLENE	4.	1.	
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.	
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND		
78-87 - 5	1,2-DICHLOROPROPANE	ND	1.	
10061-01-5	CIS-1,3-DICHLOROPROPENE		1.	
1.51-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.	
100-41-4	ETHYLBENZENE	ND	1.	
-93-4	ETHYLENE DIBROMIDE	ND	1.	
3-1	FREON-TF	ND	1.	
3-6	2-HEXANONE	ND	1.	
15-39-2		ND	5.	
108-10-1	METHYLENE CHLORIDE	ND	5.	
100-42-5	4-METHYL-2-PENTANONE (MIBK)	ND	5.	
	STYRENE	ND	1.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.	
127-18-4	TETRACHLOROETHYLENE	ND	1.	
109-99-9	TETRAHYDROFURAN	ND	5.	
108-88-3	TOLUENE	ND	1.	
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.	
79-00-5	1,1,2-TRICHLOROETHANE	ND		
79-01-6	TRICHLOROETHYLENE		1.	
75-69-4	TRICHLOROFLUOROMETHANE	81.	1.	
108-05-4	VINYL ACETATE	ND	1.	
75-01-4		ND	5.	
95 -47-6	VINYL CHLORIDE	ND	5,	
70-41-0	TOTAL XYLENES	ND	1.	

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CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-10S-2A

WCAS JOB #: 13533

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-10S-2R

WCAS JOB #: 13533

DATE RECEIVED: 08/24/89 RUN NUMBER: 13533V28
DATE EXTRACTED: 09/06/89 SAMPLE AMOUNT: 5ML
DATE ANALYZED: 09/06/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

	•			
CAS #	COMPOUND	CONCENTRATION	DET LIMIT	
67-64-1	ACETONE	ND	5.	
71-43-2	BENZENE	ND	1.	
75-27-4	BROMODICHLOROMETHANE	ND	i.	
75-25-2	BROMOFORM	ND	1.	
74-83-9	BROMOMETHANE	ND	5.	
78-93-3	2-BUTANONE (MEK)	ND	5.	
75-15-0	CARBON DISULFIDE	ND	1.	
56-23-5	CARBON TETRACHLORIDE	ND	1.	
108-90-7	CHLOROBENZENE	ND	1.	
75-00-3	CHLOROETHANE	ND	5.	
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.	
67-66-3	CHLOROFORM	ND	10.	
74-87-3	CHLOROMETHANE	ND	5.	
108-41-8	CHLOROTOLUEN			
124-48-1	DIBROMOCHLOR THANE	ND	1.	
95-50-1	1,2-DICHLOROL ZENE	ND	1.	
541-73-1	1,3-DICHLOROBENZENE	ND	1.	
106-46-7		ND	1.	
75-34-3		ND	1.	
	1,1-DICHLOROETHANE	ND	1.	
107-06-2	1,2-DICHLOROETHANE	ND	1.	
75-35-4	1,1-DICHLOROETHYLENE	ND	1.	
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.	
156-60-5	TRANS-1, 2-DICHLOROETHYLENE	ND	1.	
78-87-5	1,2-DICHLOROPROPANE	ND	1.	
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.	
10061-02-6	•	ND	1.	
100-41-4	ETHYLBENZENE	ND	1.	
106-93-4	ETHYLENE DIBROMIDE	ND	1.	
76-13 - 1	FREON-TF	ND	1.	
119-78-6	2-HEXANONE	ND	5.	
75-09-2	METHYLENE CHLORIDE	ND	5.	
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.	
100-42-5	STYRENE	ND	1.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.	
127-18-4	TETRACHLOROETHYLENE	ND	1.	
109-99-9	TETRAHYDROFURAN	ND	5.	
108-88-3	TOLUENE	ND	1.	
71-55-6	1,1,1-TRICHLOROETHANE	ND	1.	
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.	
79-01-6	TRICHLOROETHYLENE	ND	1.	
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.	
108-05-4	VINYL ACETATE	ND	5.	
75-01-4	VINYL CHLORIDE	ND	5.	
95-47-6	TOTAL XYLENES	ND		
, 0	TOTAL MITHING	MD	1.	

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-10S-2R

WCAS JOB #: 13533

1 NONE FOUND

UNITS: UG/L (PPB)

APPROXIMATE

FRACTION CONCENTRATION

COMPOUND NAME

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

		Woo	dward.	Clyde Consult	ants C	SHIPM	ENT NO.:
		C	HAIN OF	CUSTODY RECO	ORD	PAGE_	1 OF 3
	PROJE	CT NAME:	Duc	In Arrafi	Co (Ca) DATE	8 1221 39
	PROJE	CT NO.:	874	1263 J - Tus	sk l		
Sample Number	Location	Type of	Sample	Type of Container,		of Preservation	Analysis Required *
		Material	Method	40 nd Va	Temp	Chemical	
10cc-15-2A	WC2-19	规是	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	BUILTIRE	105	NENE	
1100-15-20	Ž			4 02 9/655			
wcc-15-2R	7			40 ACT VOA			
wcc-15-25				4			
14CC-25-2A				1	<u> </u>		
1VCC-25-2B	<u> </u>			4)	1-1-1-		
WCC-25-2C				4 21 glass			
WCC-25-2R WCC-25-25				AD AN UDA	+		
WCC-35-2A	Mcc=20			1.1	+ + +		
WCC-35-2B				₩	† † †		
(NCC-35-2C				4 02. 9 lass			
:vcc-35-2R				40 MES : 16A			
wec-35-25	- V			1 3		•	
WCC-45-2A		 			1 1 1		
wcc-45-28				<u> </u>	1		
1)cc 45=2c				4 sz. ylass	1 1 1		
WCC-45-2R				40 LL VOA	+	\/	
WCC - 4S - 2S Total Number of S	amples Shi	poed:	Sampler	's Signature:	Tax Si	· · · · · · · · · · · · · · · · · · ·	
Relinquished By:	/1	.1		Received By:	7 C	1.0	Date
Signature		Yau -		Signature	0 111	1400	<u> </u>
Printed Name Company	· · ·	<u>د د</u>	,74(2/1)	Printed Name Company		-1709	Time
Reason	exit :	ie Jelin	ے ہے۔				2.12
Relinquished By: ~ Signature	2	>_ 3 (Received By:	Vans C	Idenal.	Date
Printed Name	1cm	12-1-1		Signature/ Printed Name	1 1 0	ede vall	3/24/39
Company	1 1 - 1			Company	WA	5	Time /// // // // // // // // // // // // /
Reason Relinquished By:				Received By:			Date
Signature				Signature			/ Date
Printed Name				Printed Name			Time
Company Reason				Company			
Relinquished By:				Received By:			Date
Signature Printed Name				Signature Printed Name			
Company				_ Company			Time
Reason							
Special Shipment /	Handling .	/ Storage Re	equirements	::		b 13	533

* Note — This does not constitute authorization to proceed with analysis

LA/OR -0183-421

			244-
Woodward-	Clyde Consultants 🗳	SHIPMENT NO.	.:
CHAIN OF	CUSTODY RECORD	PAGE 2 OF	= 3
PROJECT NO.: 8941	las Aircraft Co. (CG) 863 J- TASK I	DATE 812	3189
Sample Number Location Type of Sample	Type of Container Type of Prese		is Required *
Material Method		mical	
WCC-55-2A WCC-55 MO WATER PANER	1 C NO	ME	
WCC-55-28/		 	
WCC-55-2C	40z. 1 34455		
WCC-55-22	HO SO VOA		
wcc-55-25 V			
WCC-75-2A.ivcc-75			
WCC-75-26/	<i>V</i>		
wcc-75-2cV	4 ozel glass		
WCE-75-2R/	aualt VoA		
NCC-75-25 V	1		
WCC-85-2A/wcc-85	1 4		
WCC-85-28/			
wcc-33-2c/	4 oz. Y glass		
WCC-35-28/	40 MJ V2A		
	3 000		
ucc-3-25/V	4		
WCC-105-24 WCC-105	 		
WCE-105-28/	Y Y	+	
WCC - WS - 2C	4 02. Seess		
WCC-105-2R	40, LE & VOA	#	
NCC-105-25 V V V	V 38	<u> </u>	
Total Number of Samples Shipped: Sampler	's Signature:		T
Relinquished By: Party Star	Received By:	T. A.	Date
Printed Name PETET GKESMA	Signature		51,2-10
Company /wc	Company		Time
Reason for daling to was	1	•	8: 7
Relinquished By:	Received By: Navi Classical Signature Printed Name	00	Date
Signature	_ Signature Claura	yec ,	8/24/39
Printed Name // //		/ Gual	Time
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Relinquished By:	Received By:		Date
Signature	Signature		/ /
Printed Name	Printed Name		- '- '- '- '- '- '- '- '- '- '- '- '- '-
Company	Company		Time
Reason			ļ
Relinquished By:	Received By:		Date
SignaturePrinted Name	Signature Printed Name		
Company	Company		Time
0			1

Special Shipment / Handling / Storage Requirements:

1013533

* Note - This does not constitute authorization to proceed with analysis

LA, OR -0183-421

	Woodward-	Clyde Consult:	ants 🗲	SHIPM	ENT NO.:
	CHAIN OF	CUSTODY RECO	ORD	PAGE_	3 of 3
	CT NAME: Duyla	_ \		(C6) DATE	8 123189
PROJE	CT NO.: \$941.86	31 - Task	<u> </u>		
Sample Number Location	Type of Sample Material Method	Type of Container	Type o	f Preservation Chemical	Analysis Required *
wcc-10-24/wcc-10	WIEX BILER	40 Ml VOA	ICE	MINE	
mcc-17-28					
ncc-12-201		4 oz. glass	1 1 1		
WCC-10-2AV		40 ml VUA			
wcc-10-25/ V					
wcc -3D - 2B			+ + +		
WCC-30-20		4 02 01-5	 		
wcc-30-2R.		4 oz. glass AU AR VOA	-		
WKC-30-25 V		V	V	- V	
		· .			
			 -		
Total Number of Samples Ship	oped: Sampler'	s Signature:		Hone	
Relinquished By:		Received By:		2 0 V	Date
Signature		_ Signature		ell/ray	/ SICUIS
Company - IN	CC Glassman	Printed Name Company	/-	1664	Time
Reason BANG Del	ivery to was	_ Company			9:1
Relinquished By:	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Received By:	1	0.1	m Date
Signature		_ Signature// _ Printed Name/	lary	adrual	2 PAY Kg
Company /- /		_ Company	141/12	ecte, Wall	Time
Reason		_	00013		11:04 4.4
Relinquished By: Signature		Received By:			Date
Printed Name		Signature Printed Name			
Company		_ Company			Time
ReasonRelinquished By:		Received Pro			
Signature		Received By: Signature			Date / /
Printed Name		Printed Name			
Reason		_ Company			
Special Shipment / Handling /					
·					
				16 I 3	538
* Note: This day	Carrier Constitution of the Constitution of th				
* Note — This does not consti	itute authorization to	proceed with analysis			LA/OR-0183-421

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RECEIVED

September 29, 1989

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WCC-SANTA ANA



ANALYTICAL CHEMISTS

Α

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn:

Dr. Alistaire Callender

JOB NO.

13764

LABORATORY REPORT

Samples Received: Thirteen (13) soils

Date Received: 9-25-89

Purchase Order No: Proj#: 8941863J-I/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

<u>Analysis</u>

Results

Three (3) soils

Volatile Organics

by EPA 8240

Data Sheets

Page 1 of 1

B. Michael Hovanec Senior Staff Chemist D.J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225 • FAX 213.948-5850

CLIENT: WOODWARD-CLYDE RECEIVE PLE: 6S-8-4

WCAS JOB #: 13764

007 0 4 (91)

DATE RECEIVED: 09/25/89
DATE EXTRACTED: 09/29/89
DATE ANALYZED: 09/29/89
WCC-SANTA ANARUN NUMBER: 13764V4
MATRIX: 13764V4
SAMPLE AMOUNT: 0.1G
MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/KG (PPB)

CAS # ========	COMPOUND	CONCENTRATION	DET LIMIT		
67-64-1	ACETONE	-=====================================			
71-43-2	BENZENE	ND	300.		
75-27-4	BROMODICHLOROMETHANE	ND	50.		
75-25-2	BROMOFORM	ND	50.		
74-83-9		ND	50.		
78-93-3		9400.	300.		
75-15-0	CARBON DISULFIDE		300.		
56-23-5		ND	50.		
108-90-7	CHLOROBENZENE	ND	50.		
75-00-3	CHLOROETHANE	ND	50.		
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	300.		
67-66-3	CHLOROFORM	ND	500.		
74-87-3	CHLOROMETHANE	ND	50.		
108-41-8	CHLOROTOLUENE	ND	300.		
124-48-1	DIBROMOCHLOROMETHANE	ND	50.		
95-50-1	1,2-DICHLOROBENZENE	ND	50.		
541-73-1	1,2-DICHLORODENZENE	ND	50.		
106-46-7	1,3-DICHLOROBENZENE	ND	50.		
75-34-3	1,4-DICHLOROBENZENE	ND	50.		
107-06-2	1,1-DICHLOROETHANE	ND	50.		
75-35-4	1,2-DICHLOROETHANE	ND	50.		
	1,1-DICHLOROETHYLENE	ND	50.		
156-59-4		ND	50.		
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	50.		
78-87-5	1,2-DICHLOROPROPANE	ND	50.		
10061-01-5		ND	50.		
10061-02-6	I/O DIGHEOROI NOI LIVE	ИD	50.		
100-41-4		ND	50.		
106-93-4		ND	50.		
76-13-1		ND	50.		
119-78-6	2-HEXANONE	ND	300.		
75-09-2		ND	300.		
108-10-1	4-METHYL-2-PENTANONE (MIBK)	8400.	300.		
100-42-5	STYRENE	ND			
79-34-5	1,1,2,2-TETRACHLOROETHANE		50.		
127-18-4	TETRACHLOROETHYLENE	ND	50.		
109-99-9	TETRAHYDROFURAN	ND	50.		
108-88-3	TOLUENE	ND	300.		
71-55-6	1,1,1-TRICHLOROETHANE	1000.	50.		
79-00-5	1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE	ND	50.		
79-01-6	TRICHLOROETHYLENE	ND	50.		
75-69-4		ND	50.		
108-05-4	TRICHLOROFLUOROMETHANE	ND	50.		
75-01-4	VINYL ACETATE	ND	300.		
	VINYL CHLORIDE	ND	300.		
95-47-6	TOTAL XYLENES	ND	50.		

CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13764

SAMPLE: 6S-8-4

UNITS: UG/KG (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 BUTYL CELLOSOLVE

VOA 300.

CLIENT: WOODWARD-CLYDE SAMPLE: 6S-9-4

WCAS JOB #: 13764

DATE RECEIVED: 09/25/89

DATE EXTRACTED: 09/29/89

DATE ANALYZED: 09/29/89

RUN NUMBER: 13764V2

SAMPLE AMOUNT: 0.1G

MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/KG (PPB)

CAS # =========	COMPOUND	CONCENTRATION	DET LIMIT	
67-64-1	ACETONE	=========== ND	300.	
71-43-2	BENZENE	ND	50.	
75-27-4	BROMODICHLOROMETHANE	ND	50.	
75-25-2	BROMOFORM	ND	50.	
74-83-9	BROMOMETHANE	ND	300.	
78-93-3	2-BUTANONE (MEK)	9200.	300.	
75-15-0	CARBON DISULFIDE	ND		
56-23-5	CARBON TETRACHLORIDE	ND	50.	
108-90-7	CHLOROBENZENE	ND	50.	
75-00-3	CHLOROETHANE		50.	
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	300.	
67-66-3	CHLOROFORM	ND	500.	
74-87-3	CHLOROMETHANE	ND	50:	
108-41-8	CHLOROTOLUENE	ND	300.	
124-48-1	DIBROMOCHLOROMETHANE	ND	50.	
95-50-1		ND	50.	
541-73-1	1,2-DICHLOROBENZENE	ND	50.	
	1,3-DICHLOROBENZENE	ND	50.	
106-46-7	1,4-DICHLOROBENZENE	ND	50.	
75-34-3	1,1-DICHLOROETHANE	ND	50.	
107-06-2	1,2-DICHLOROETHANE	ND	50.	
75-35-4	1,1-DICHLOROETHYLENE	240.	50.	
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	50.	
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	50.	
78-87-5	1,2-DICHLOROPROPANE	ND	50.	
10061-01-5		ND	50.	
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	50.	
100-41-4	ETHYLBENZENE	ND	50.	
106-93-4	ETHYLENE DIBROMIDE	ND	50.	
76-13-1	FREON-TF	ND		
119-78-6	2-HEXANONE	ND	50.	
75-09-2	METHYLENE CHLORIDE		300.	
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	300.	
100-42-5	STYRENE (MIBK)	2500.	300.	
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	50.	
127-18-4		ND	50.	
109-99-9	TETRACHLOROETHYLENE	ND	50.	
	TETRAHYDROFURAN	ND	300.	
108-88-3	TOLUENE	2200.	50.	
71-55-6	1,1,1-TRICHLOROETHANE	ND	50.	
79-00-5	1,1,2-TRICHLOROETHANE	ND	50.	
79-01-6	TRICHLOROETHYLENE	83.	50.	
75 - 69-4	TRICHLOROFLUOROMETHANE	ND	50.	
108-05-4	VINYL ACETATE	ND	300.	
75-01-4	VINYL CHLORIDE	ND	300.	
95-47-6	TOTAL XYLENES	ND	50.	

CLIENT: WOODWARD-CLYDE

SAMPLE: 6S-9-4

WCAS JOB #: 13764

UNITS: UG/KG (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 BUTYL CELLOSOLVE

VOA 700.

CLIENT: WOODWARD-CLYDE

WCAS JOB #: 13764

SAMPLE: 6S-10-4

DATE RECEIVED: 09/25/89

DATE EXTRACTED: 09/29/89

DATE ANALYZED: 09/29/89

RUN NUMBER: 13764V1

SAMPLE AMOUNT: 1.0G

MATRIX: SOIL

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/KG (PPB)

CONCENTRATION DET LIMIT CONCENTRATION DE					
ACETONE	CAS #	COMPOUND		_	
75-27-4 BENZENE	67-64-1				
75-27-4 BROMODICHLOROMETHANE		BENZENE			
75-25-2 BROMOFORM ND 5. 74-83-9 BROMOMETHANE ND 30. 78-93-3 2-BUTANONE (MEK) 550. 30. 75-15-0 CARBON DISULFIDE ND 5. 108-90-7 CHLOROBENZENE ND 5. 110-75-8 2-CHLOROETHANE ND 50. 67-66-3 CHLOROFORM ND 5. 108-41-8 CHLOROFORM ND 5. 124-48-1 DIBROMOCHLOROMETHANE ND 5. 124-48-1 DIBROMOCHLOROMETHANE ND 5. 541-73-1 1,3-DICHLOROBENZENE ND 5. 541-73-1 1,3-DICHLOROBENZENE ND 5. 75-34-3 1,1-DICHLOROBENZENE ND 5. 106-46-7 1,4-DICHLOROETHANE ND 5. 107-06-2 1,2-DICHLOROETHANE ND 5. 11-35-34-3 1,1-DICHLOROBENZENE ND 5. 125-34-3 1,1-DICHLOROBENZENE ND 5. 126-69-4 CIS-1,2-DICHLOROETHYLENE ND 5. 156-69-4 CIS-1,2-DICHLOROETHYLENE ND 5. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 5. 106-41-4 ETHYLENE ND 5. 106-10-5 CIS-1,3-DICHLOROPROPENE ND 5. 100-41-4 ETHYLENE DIBROMIDE ND 5. 109-93-4 ETHYLENE DIBROMIDE ND 5. 119-78-6 2-HEXANONE ND 5. 119-78-6 2-HEXANONE ND 5. 119-78-6 2-HEXANONE ND 5. 119-78-6 2-HEXANONE ND 5. 119-78-6 1,1,2,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,2,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,1,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,1,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,1,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,1,2-TETRACHLOROETHANE ND 5. 119-78-6 2-HEXANONE (MIBK) 330. 30. 100-42-5 STYRENE ND 5. 119-78-6 1,1,1,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,2,2-TETRACHLOROETHANE ND 5. 119-78-6 1,1,1,2-TETRACHLOROETHANE ND 5. 119-10-10-10-10-10-10-10-10-10-10-10-10-10-		BROMODICHLOROMETHANE			
74-83-9 BROMOMETHANE					
78-93-3	74-83-9				
75-15-0 CARBON DISULFIDE ND 5.	78-93-3				
56-23-5 CARBON TETRACHLORIDE	75-15-0				
108-90-7					
T5-00-3	108-90-7				
110-75-8 2-CHLOROETHYLVINYL ETHER	75-00-3				
67-66-3 CHLOROFORM ND 5. 74-87-3 CHLOROFORM ND 5. 108-41-8 CHLOROTOLUENE ND 30. 108-41-8 CHLOROTOLUENE ND 5. 124-48-1 DIBROMOCHLOROMETHANE ND 5. 95-50-1 1,2-DICHLOROBENZENE ND 5. 541-73-1 1,3-DICHLOROBENZENE ND 5. 106-46-7 1,4-DICHLOROBENZENE ND 5. 107-06-2 1,2-DICHLOROBENZENE ND 5. 107-06-2 1,2-DICHLOROETHANE ND 5. 107-06-2 1,2-DICHLOROETHANE ND 5. 156-59-4 CIS-1,2-DICHLOROETHYLENE ND 5. 156-69-4 CIS-1,2-DICHLOROETHYLENE ND 5. 156-60-5 TRANS-1,2-DICHLOROETHYLENE ND 5. 10061-01-5 CIS-1,3-DICHLOROFOPPANE ND 5. 10061-02-6 TRANS-1,3-DICHLOROFROPENE ND 5. 100-41-4 ETHYLENE DIBROMIDE ND 5. 106-93-4 ETHYLENE DIBROMIDE ND 5. 119-78-6 2-HEXANONE ND 5. 119-78-6 2-HEXANONE ND 30. 108-10-1 4-METHYL-2-PENTANONE (MIBK) 330. 100-42-5 STYRENE ND 5. 179-34-5 1,1,2,2-TETRACHLOROETHANE ND 5. 109-99-9 TETRAHYDROFURAN ND 30. 108-88-3 TOLUENE ND 5. 119-06-6 TRICHLOROETHYLENE ND 5. 179-00-5 1,1,2-TRICHLOROETHANE ND 5. 179-00-6 TRICHLOROETHYLENE ND 5. 179-01-6 TRICHLOROETHYLENE ND 5. 179-01-6 TRICHLOROETHYLENE ND 5. 175-69-4 TRICHLOROETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 108-05-4 VINYL ACETATE ND 30. 108-05-4 VINYL ACETATE ND 30.					
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108-41-8					
124-48-1					
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106-46-7		1,2-DICHLOROBENZENE			
75-34-3		1,3-DICHLOROBENZENE		5.	
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156-59-4		1,2-DICHLOROETHANE	N D	5.	
156-60-5		1,1-DICHLOROETHYLENE	ND	5.	
TRANS-1, 2-DICHLOROETHYLENE	-	CIS-1,2-DICHLOROETHYLENE	ND		
1,2-DICHLOROPROPANE ND 5.		TRANS-1,2-DICHLOROETHYLENE	ND		
TOO61-01-5		1,2-DICHLOROPROPANE	ND		
TRANS-1,3-DICHLOROPROPENE					
100-41-4					
Thylene dibromide					
TREON-TF		ETHYLENE DIBROMIDE			
119-78-6 2-HEXANONE		FREON-TF			
METHYLENE CHLORIDE		2-HEXANONE			
108-10-1 4-METHYL-2-PENTANONE (MIBK) 330. 30. 100-42-5 STYRENE ND 5. 79-34-5 1,1,2,2-TETRACHLOROETHANE ND 5. 127-18-4 TETRACHLOROETHYLENE ND 5. 109-99-9 TETRAHYDROFURAN ND 30. 108-88-3 TOLUENE 150. 5. 71-55-6 1,1,1-TRICHLOROETHANE ND 5. 79-00-5 1,1,2-TRICHLOROETHANE ND 5. 79-01-6 TRICHLOROETHYLENE 7. 5. 75-69-4 TRICHLOROFLUOROMETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.		METHYLENE CHLORIDE			
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108-88-3 TOLUENE 150. 5. 71-55-6 1,1,1-TRICHLOROETHANE ND 5. 79-00-5 1,1,2-TRICHLOROETHANE ND 5. 79-01-6 TRICHLOROETHYLENE 7. 5. 75-69-4 TRICHLOROFLUOROMETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.					
71-55-6 1,1,1-TRICHLOROETHANE ND 5. 79-00-5 1,1,2-TRICHLOROETHANE ND 5. 79-01-6 TRICHLOROETHYLENE 7. 5. 75-69-4 TRICHLOROFLUOROMETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.					
79-00-5 1,1,2-TRICHLOROETHANE ND 5. 79-01-6 TRICHLOROETHYLENE 7. 5. 75-69-4 TRICHLOROFLUOROMETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.					
79-01-6 TRICHLOROETHYLENE 7. 5. 75-69-4 TRICHLOROFLUOROMETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.					
75-69-4 TRICHLOROFLUOROMETHANE ND 5. 108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.					
108-05-4 VINYL ACETATE ND 30. 75-01-4 VINYL CHLORIDE ND 30.					
75-01-4 VINYL CHLORIDE ND 30.				5.	
ND 30.			ND	30.	
	· · · ·		ND	30.	
95-47-6 TOTAL XYLENES ND 5.	95-4/-6	TOTAL XYLENES	ND		

CLIENT: WOODWARD-CLYDE WCAS JOB #: 13764

SAMPLE: 6S-10-4

UNITS: UG/KG (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

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wcc-s	ANTA ANA						•	
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1	PROJEC	CT NO.:	494.	863.5 -	7-			
Sample Number	Location		Sample	Type of Container	Туре	of Preservation	Analysi	s Required*
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Company_

Printed Name,

Special Shipment / Handling / Storage Requirements:

Signature_

Company_

Reason __

Printed Name

w1376A

* Note - This does not constitute authorization to proceed with analysis

LA/OR-0183-421

Time

October 18, 1989

RECEIVED

WOODWARD-CLYDE CONSULTANTS 203 N. Golden Circle Dr. Santa Ana, CA 92705 OCT 1 9 (SEC)
WCC-SANTA ANA



Attn:

Dr. Alistaire Callender

JOB NO.

13882

LABORATORY REPORT

Samples Received: Three (3) liquids in quadruplicate

Date Received: 10-9-89

Date Released for Analysis: 10-11-89

Purchase Order No: Proj#: 8941863J/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

Analysis

Results

Three (3) liquids

Volatile Organics by EPA 624

Data Sheets

Page 1 of 1

Michael Shelton Senior Chemist

J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225 • FAX 213/948-5850

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-6S-1A

WCAS JOB #: 13882

DATE RECEIVED: 10/09/89 RUN NUMBER: 13882V5 DATE EXTRACTED: 10/17/89 SAMPLE AMOUNT: 5ML DATE ANALYZED: 10/17/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPR)

G) G "	(324/ 3240)	UNITS: UG/L	(PPB)
CAS # ========	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	RELIGIE	TETTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	1.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	5.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75 - 00-3	CHLOROETHANE	ND	1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.
67-66-3	CHLOROFORM	ND	10.
74-87-3	CHLOROMETHANE	ND	1.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,4-DICHLOROBENZENE	ND	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
107-06-2	1,2-DICHLOROETHANE	4.	1.
75-35-4	1 1-DICHTOROETHANE	3.	i.
L56-59-4	1,1-DICHLOROETHYLENE	210.	1.
156-60-5	CIS-1, 2-DICHLOROETHYLENE	12.	1.
78-87-5	TRANS-1,2-DICHLOROETHYLENE	7.	1.
0061-01-5	1,2-DICHLOROPROPANE	ND	ĩ.
.0061-02-6	DICHLOROPKOPKNE	ND	1.
.00-41-4	TITLE TITLE TO DICTION OF RUPENE	ND	1.
06-93-4	ETHYLBENZENE	ND	1.
6-13-1	ETHYLENE DIBROMIDE	ND	1.
19-78-6	FREON-TF	ND	1.
5-09-2	2-HEXANONE	ND	5.
08-10-1	METHYLENE CHLORIDE	ND	
	4-METHYL-2-PENTANONE (MIBK)	ND	5.
00-42-5	STYRENE	ND	5.
9-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
27-18-4	TETRACHLOROETHYLENE		1.
09-99-9	TETRAHYDROFURAN	ND	1.
08-88-3	TOLUENE	ND	5.
1-55-6	1,1,1-TRICHLOROETHANE	ND	1.
9-00-5	1,1,2-TRICHLOROETHANE	130.	1.
9-01-6	TRICHLOROETHYLENE	4.	1.
5-69-4	TRICHLOROFLUOROMETHANE	140.	1.
08-05-4	VINYL ACETATE	ND	1.
5-01-4	VINYL CHLORIDE	ND	5.
5-47-6	TOTAL XYLENES	ND	5.
	TOTAL AILENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-6S-1A WCAS JOB #: 13882

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-9S-1A

WCAS JOB #: 13882

DATE RECEIVED: 10/09/89 DATE EXTRACTED: 10/17/89 DATE ANALYZED: 10/17/89 RUN NUMBER: 13882V7 SAMPLE AMOUNT: 5ML MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

	, , , , , , , , , , , , , , , , , , , ,	UNITS: UG/L	(PPB)
CAS # ========	COMPOUND	CONCENTRATION	DET LIMIT
67-64-1	ACETONE	ND	
71-43-2	BENZENE	ND	5.
75-27-4	BROMODICHLOROMETHANE	ND	1.
75-25-2	BROMOFORM	ND	1.
74-83-9	BROMOMETHANE	ND	1.
78-93-3	2-BUTANONE (MEK)	ND	5.
75-15-0	CARBON DISULFIDE	ND	5.
56-23-5	CARBON TETRACHLORIDE	ND	1.
108-90-7	CHLOROBENZENE	ND	1.
75-00-3	CHLOROETHANE	ND	1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.
67-66-3	CHLOROFORM	ND	10.
74-87-3	CHLOROMETHANE	ND	1.
108-41-8	CHLOROTOLUENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
95-50-1	1,2-DICHLOROBENZENE	ND	1.
541-73-1	1,3-DICHLOROBENZENE	ND	1.
106-46-7	1,3-DICHLOROBENZENE	ND	1.
75-34-3	1,4-DICHLOROBENZENE	ND	1.
107-06-2	1,1-DICHLOROETHANE	ND	1.
75-35-4	1,2-DICHLOROETHANE	ND	1.
156-59-4	1,1-DICHLOROETHYLENE	ND	1.
156-60-5	CIS-1,2-DICHLOROETHYLENE	7.	1.
78-87-5	TRANS-1, 2-DICHLOROETHYLENE	ND	1.
10061-01-5	1,2-DICHLOROPROPANE	ND	1.
10061-01-5		ND	1.
100-41-4	TRANS-1,3-DICHLOROPROPENE	ND	1.
	ETHYLBENZENE	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
76-13-1	FREON-TF	2.	1.
119-78-6	2-HEXANONE	ND	5.
75-09-2	METHYLENE CHLORIDE	ND	5.
108-10-1	4-METHYL-2-PENTANONE (MIBK)	ND	5.
100-42-5	STYRENE	ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.
127-18-4	TETRACHLOROETHYLENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	5.
108-88-3	TOLUENE	ND	
71-55-6	1,1,1-TRICHLOROETHANE	ND ND	1.
79-00-5	1,1,2-TRICHLOROETHANE	ND	1.
79-01-6	TRICHLOROETHYLENE		1.
75-69-4	TRICHLOROFLUOROMETHANE	15.	1.
108-05-4	VINYL ACETATE	ND	1.
75-01-4	VINYL CHLORIDE	ND	5.
95-47-6	TOTAL XYLENES	ND	5.
- -	TOTAL VIDENES	ND	1.

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-9S-1A WCAS JOB #: 13882

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

1 NONE FOUND

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-12S-1A

WCAS JOB #: 13882

DATE RECEIVED: 10/09/89 DATE EXTRACTED: 10/17/89 RUN NUMBER: 13882V8 SAMPLE AMOUNT: 5ML DATE ANALYZED: 10/17/89 MATRIX: WATER

VOLATILE ORGANICS (EPA 624/8240) UNITS: UG/L (PPB)

	(=====	UNITS: UG/L (PPB)			
CAS #	COMPOUND	CONCENTRATION	DET LIMIT		
67-64-1	ACETONE	ND	======== 5.		
71-43-2	BENZENE	ND			
75-27-4	BROMODICHLOROMETHANE	ND ND	1.		
75-25-2	BROMOFORM	ND ND	1.		
74-83-9	BROMOMETHANE		1.		
78-93-3	2-BUTANONE (MEK)	ND	5.		
75-15-0	CARBON DISULFIDE	ND	5.		
56-23-5	CARBON TETRACHLORIDE	ND	1.		
108-90-7	CHLOROBENZENE	ND	1.		
75-00-3	CHLOROETHANE	ND	1.		
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	5.		
67-66-3	CHLOROFORM	ND	10.		
74-87-3	CHLOROMETHANE	ND	1		
108-41-8	CHLOROTOLUENE CHLOROTOLUENE	ND	5.		
124-48-1		ND	1.		
95-50-1	DIBROMOCHLOROMETHANE	ND	1.		
541-73-1	1,2-DICHLOROBENZENE	ND	1.		
106-46-7	1,3-DICHLOROBENZENE	ND	1.		
75-34-3	1,4-DICHLOROBENZENE	ND	1.		
	1,1-DICHLOROETHANE	ND	1.		
107-06-2	1,2-DICHLOROETHANE	- ND	1.		
75-35-4	1,1-DICHLOROETHYLENE	ND	1.		
156-59-4	CIS-1,2-DICHLOROETHYLENE	ND	1.		
156-60-5	TRANS-1,2-DICHLOROETHYLENE	ND	1.		
78-87-5	1,2-DICHLOROPROPANE	ND	1.		
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.		
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	1.		
100-41-4	ETHYLBENZENE	ND			
106-93-4	ETHYLENE DIBROMIDE	ND	1.		
76-13-1	FREON-TF		1.		
119-78-6	2-HEXANONE	4.	1.		
75-09-2	METHYLENE CHLORIDE	ND	5.		
108-10-1	4 Manual A. A. A. A. A. A. A. A. A. A. A. A. A.	ND	5.		
100-42-5	4-METHYL-2-PENTANONE (MIBK) STYRENE	ND	5.		
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	1.		
127-18-4	TETRACHLOROETHYLENE	ND	1.		
109-99-9	TETRAHYDROFURAN	ND	1.		
108-88-3		ND	5.		
71-55-6	TOLUENE	ND	1.		
79-00-5	1,1,1-TRICHLOROETHANE	ND	1.		
	1,1,2-TRICHLOROETHANE	ND	1.		
79-01-6	TRICHLOROETHYLENE	ND	1.		
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.		
108-05-4	VINYL ACETATE	ND	5.		
75-01-4	VINYL CHLORIDE	ND	5.		
95-47-6	TOTAL XYLENES	ND	1.		
		ND	⊥•		

CLIENT: WOODWARD-CLYDE CONSULTANTS SAMPLE: WCC-12S-1A WCAS JOB #: 13882

UNITS: UG/L (PPB)

APPROXIMATE

COMPOUND NAME

FRACTION CONCENTRATION

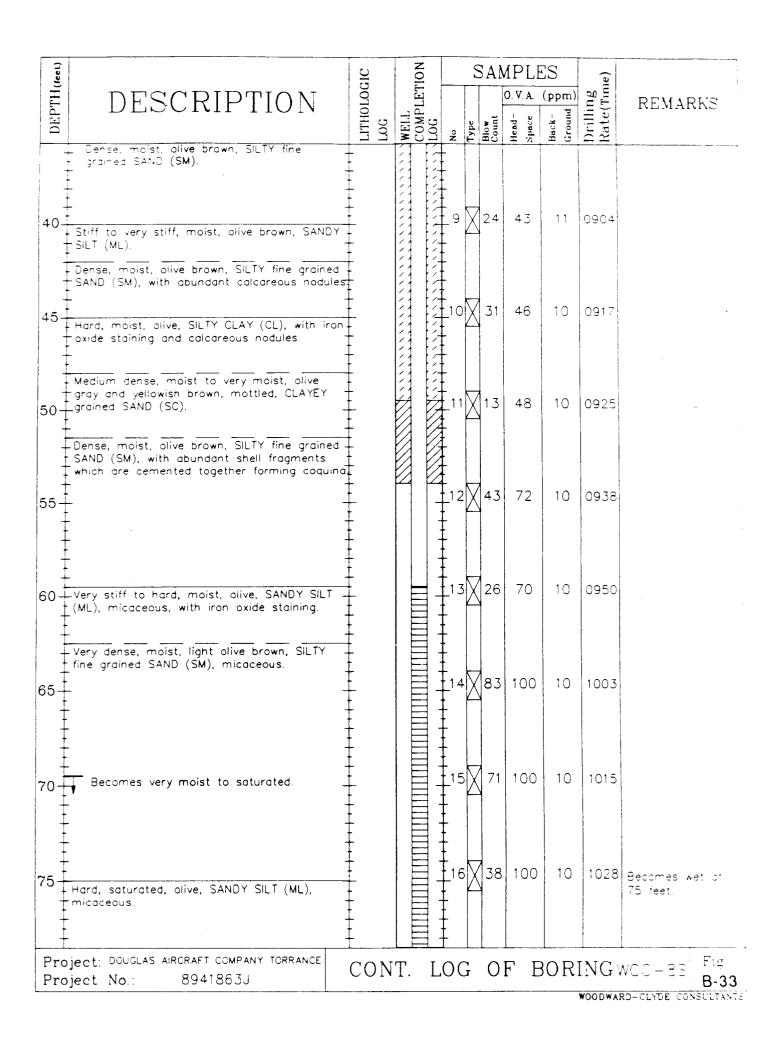
1 NONE FOUND

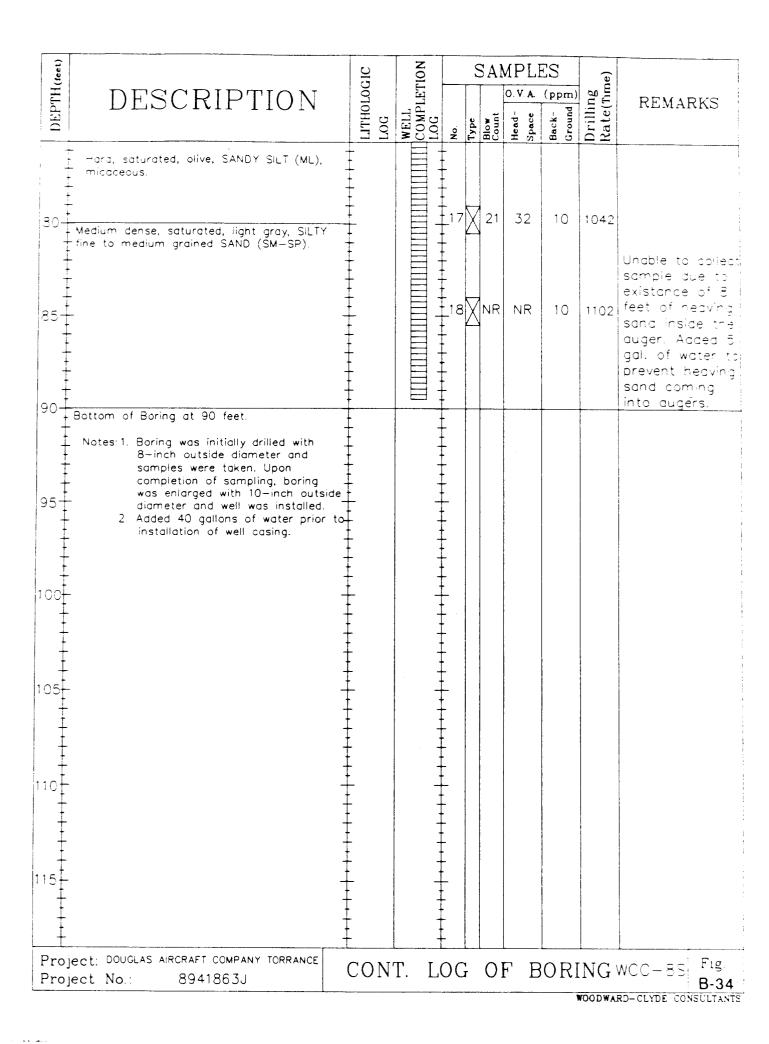
Data Reporting Qualifiers

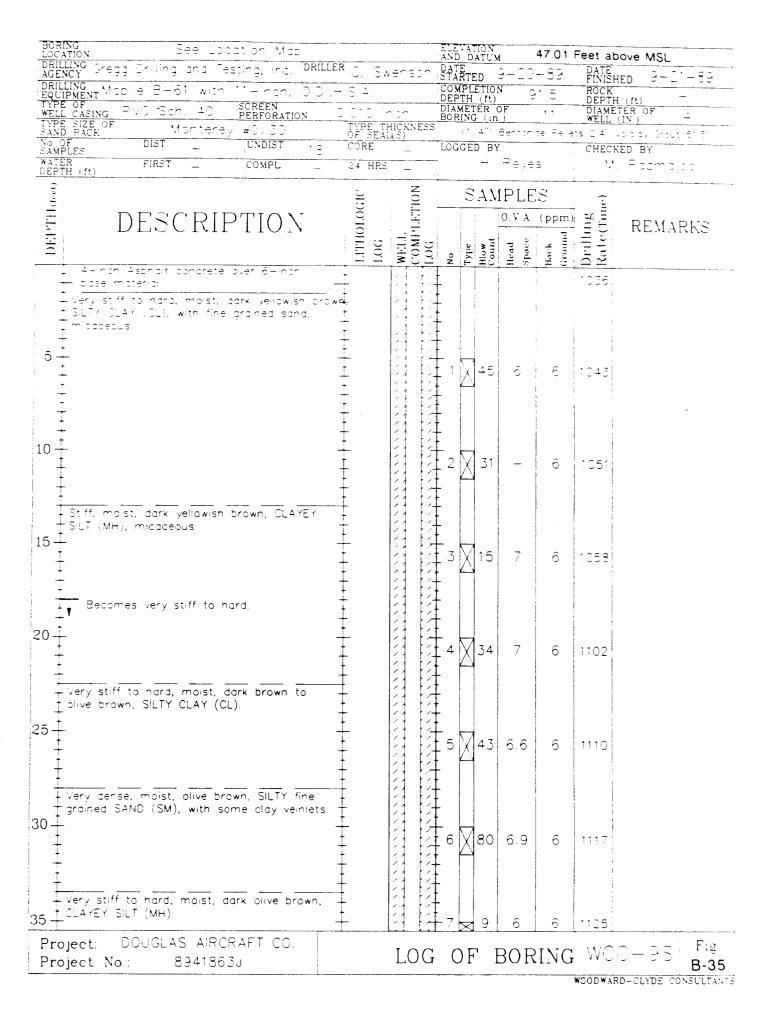
- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

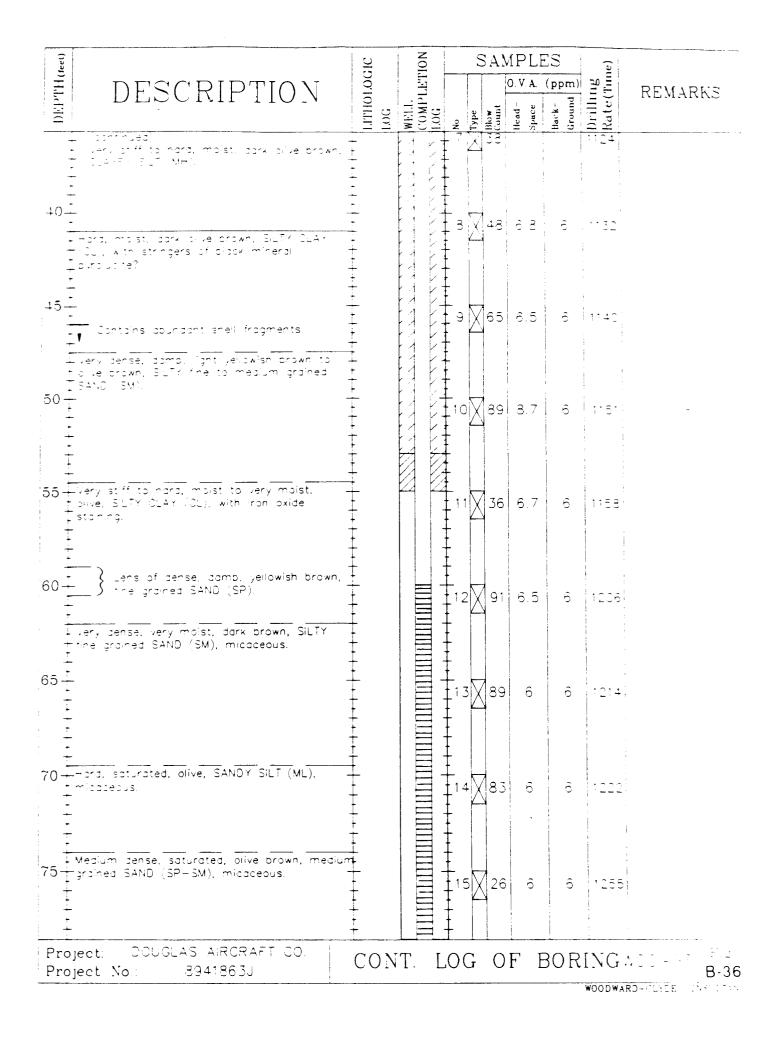
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CHAIN	PAGE	PAGEOF						
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PROJECT NO.:		<u> </u>		-				
Sample Number Location Type of Sample		Туре	of Preservation					
Material Metho	d	Temp	Chemical	Analysis Required *				
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wcc-75-15								
wcc -63 - 12 wcc -65								
WCC-05-1B		+						
WCC-05-15								
WCC-125-1A WCC-125								
WCC-125-18								
wcc-125-15 V	+	+						
XC 33 13			<u> </u>					
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	Received By:	- Ho	<u> </u>	Date				
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SignaturePrinted Name		SignaturePrinted Name						
Company	Company							
Reason Special Shipment / Handling / Storage Requiremen	nte:							
CONTACT: Peter Glassman	or Alitare	(a/b.de	(7:4) 83	5-6886				
	- · · · · -							
* Note — This does not constitute authorization								

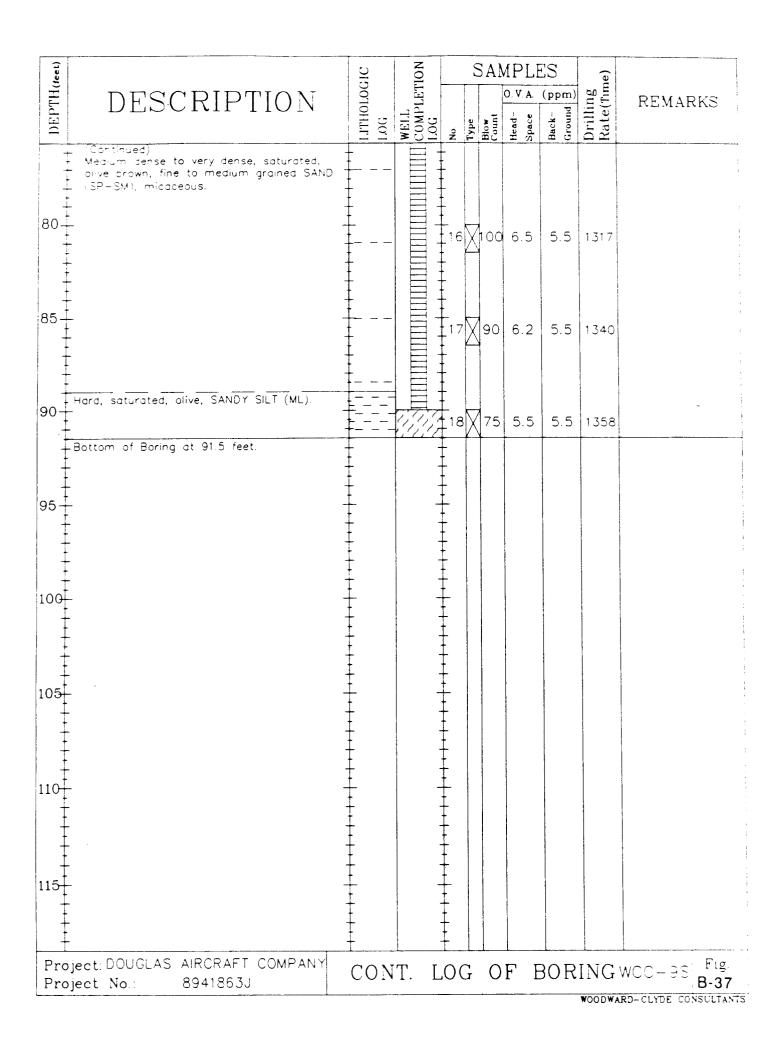
LA-OR-0183-421



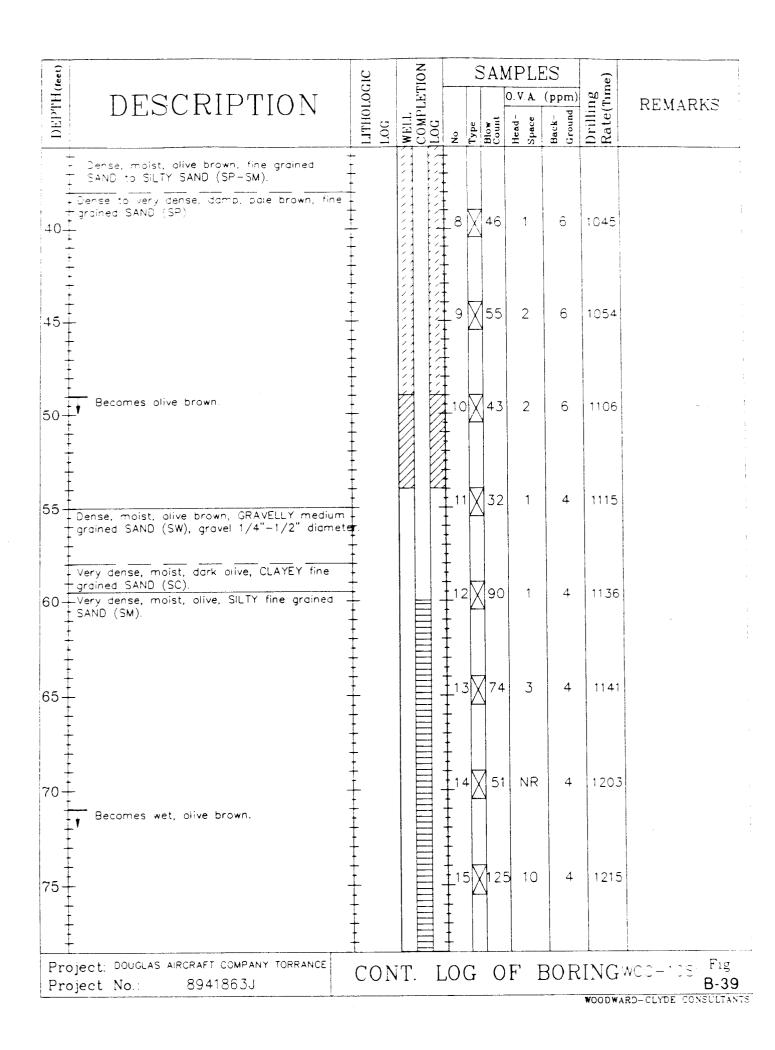








BORI	ATION See LOCATION MAD				ELE		ION TUM		51	1.12 fe	eet MSL
DRIL	LING A & R Driling, Inc. DRIL	LER M.	Ro	mero	PAT			6-7-	-89	DATE	HED 6-7-89
DRIL. EQUI	LING PMENT CME 75 with 8—inch O.D., H	.S.A.			DEP'	TH	TION (ft)	3.	0.8	ROCK DEPTH	
WELL	CASING PVC Sch. 40 SCREEN PERFORATION	0.01			BOR		ER O (in.		10		TER OF
TYPE	/SIZE OF Lonestar No. 0/30	TYP OF	E/TH SEAL	ICKNESS S)					ets 5		clay grout 49 ft
No C SAME	DIST. O UNDIST. 10		E	0	LOG		BY	aesm	cn		KED BY
WATE	R FIRST _ COMPL _	24	HRS	_		ſ		Reye:		N.	. Razmajoo
eet)		10		NO		S	AM	PLE	S	7	
DEPTH(feet)	DESCRIPTION	CITHOLOGIC		LETION				O. V. A.	(ppm)	∏iie	DEMARKS
PT	DESCRIPTION	101		L PL							REMARKS
DE			D07	WELL COMPI	No.	Type	Blow	Head- Space	Back- Ground	Drilling Rate(Tm	
-	3 1/2-inch Asphalt concrete, over 9-inc		_	777			3. 0	<u> </u>	6	0954	
-	base material. Soft, very moist to saturated, black, SAND	NY T		21 E	ŧ			,			
-	CLAY (CL) Becomes very stiff, moist, dark yellowis	1			Ŧ						
-	brown.	'' 	1		Ŧ						
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5 -		Ī			E	\vdash					
				24 E3	‡						**
	Medium dense, moist, olive brown, SILTY fingrained SAND (SM), with trace of clay.	ne 🗼	İ		‡						· ·
	grained SAND (SM), with trace of clay.	‡		11 11	+						
10-	- -	‡	1		2	XI	13	1	7	1007	
1	-	‡			‡						
	i No clay	‡		/1 //	‡						
	No clay.	‡		31 6	‡						
	-	+ -			‡_			_	_		
15	• 	+		11/2	13	X	25	2	7	1013	
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1	- -	Ŧ			ł						,
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	- -	+		31 8	† ,		21	0	6	1017	
20	Very stiff to hard, moist, dark yellowish br	own.		33 13	┼*	\triangle	21			1017	
1	SANDY CLAY (CL).	+			‡						
	<u>-</u>	+			†						
	- -	†			†						:
-	Contains large nodules of calcium	+		21 12	† 5	∇	61	0	6	1024	
25 –	- carbonate (HCL Reaction).	+			†						
+	- -	†		11 11	Ť						
+	-	+			+						
	Dense, moist, olive brown, SILTY fine grain	ed			Ξ						
30 -	SAND (SM).	Ī			<u> </u>	∇	36	1	6	1031	
30 -	-	Ŧ			Ī		1				
	-	Ī			Ī						
					‡						
	Dense, moist, olive brown, fine grained SAI to SILTY SAND (SP-SM).	ND }			‡						
35 –	CO SICLE SAMU (SE SM).	<u></u>			1 7	\mathbb{X}	32	2	6	1038	
ļ <u>-</u>	DIONE DOUGLAS APPORAGE COMPANY TOPPANCE			نط لما	1	<u> </u>	L	l		<u> </u>	F. A
	oject: Douglas aircraft company torrance oject. No.: 8941863J			LOC	, (I C	7	BOF	RINC	; WC	$\mathbb{C} = \mathbb{CS} \times \frac{\mathrm{Fig}}{B-38}$
FI	0ject 140 034.0000										ARD-CLYDE CONSULTANTS
										WOODW	ARD-CLYDE CONSULTANTS



RWOCD Douglas aircraft (C6) Torrance Facility Phase III soil and Groundwater Flowchart

